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ABSTRACT

This preliminary report is the fourth in a series describing the progress of a 6-year longitudinal study by the Educational Testing Service (ETS). The present report specifically describes initial differences between children who go on to Head Start, and those who do not, based on results of 16 of the 33 measures administered in Year 1 (1969) in three of the study sites: Portland, Oregon; St. Louis, Missouri; and Trenton, New Jersey. In addition to test scores, information was collected on family and health. Comparisons are made in relation to the children themselves (sex, age, race, month of testing, test scores, and health information) and to their family situations. The results of the comparisons are discussed in relation to (a) relevant additional information on characteristics of Head Start population provided by the Office of Child Development/Head Start; and (b) related findings in the literature on disadvantaged children, especially in respect to Head Start attendance or non-attendance. Variables relating to the parental decision to send a child to Head Start are: Head Start attendance by an older sibling, the mother's employment status, the educational level of the parents, parental attitudes towards jobs and education, size of the family, race, and the child's sex. Other parts of the longitudinal study can be located as ED 037 486, ED 043 391, and ED 043 397. (Author/AJ)

DISADVANTAGED CHILDREN AND THEIR FIRST SCHOOL EXPERIENCES

ETS-Head Start Longitudinal Study

Preliminary Description of the Initial Sample Prior to School Enrollment

A Report in Two Volumes

VOLUME 1

Report under

Grant Number CG-8256

August 1970

PREFACE

This is the fourth report describing the progress of the Longitudinal Study conducted under Contract OEO 4206 and Grants H-8256 and CG-8256. The first report (PR-68-4) discussed the theoretical considerations and measurement strategies proposed for the study of disadvantaged children and their first school experiences. The second (PR-69-12) described the test and interview operations during 1969, the first year of the study, before the children were enrolled in Head Start or other preschool programs. The third report (PR-70-2) provided an account of the study during the Head Start year in Portland, St. Louis, and Trenton (Head Start was not yet available in Lee County, beginning there instead in the year preceding Grade 1). Based on information obtained during 1969, the report described such aspects of the initial longitudinal sample as Head Start enrollment, racial composition, and socioeconomic status.

This report provides many more descriptive characteristics of the initial longitudinal sample in Portland, St. Louis and Trenton, prior to enrollment in school. It is based on the first analyses of 16 of the 33 instruments administered during 1969 including a parent interview and medical examination designed to elicit information about family and environmental characteristics. Although it is the first report in the study to provide test data, the findings must nevertheless be considered tentative until further, more probing, analyses can be performed.

Virginia Shipman
Project Director

ACKNOWLEDGMENTS

This report is not only the product of the current project staff (see Appendix D), but also of many other contributors at Educational Testing Service and the study sites.

Any acknowledgments for this project would be incomplete without giving primary recognition to Scarvia B. Anderson. There would have been no study without her able leadership during the difficult early years of the project. Special mention must also be made of the guidance and direction given to the study by the Steering Committee, Samuel J. Messick (Chairman), Albert E. Beaton, Walter Emmerich, Edmund W. Gordon, Winton H. Manning, Marshall P. Smith, Silvan S. Tompkins, and Melvin Tumin. Their questions, ideas, and constructive criticisms contributed greatly to both the form and substance of the study.

Special thanks are owed to the former Local Coordinators (Mrs. Lida Campbell, Lee County, Alabama; Mrs. Verna Shepherd, Portland, Oregon; Mr. Ronald Greeley and Mr. Bobby Westbrooks, St. Louis, Missouri; and Mr. Conrad McLean, Trenton, New Jersey); all contributed knowledge of their communities and varied technical and administrative skills to organizing and coordinating testing activities in the field. I owe gratitude as well to the many testers, test center and playroom supervisors, and drivers without whose efforts no data would have been collected. Their hard work, enthusiasm, and patience were a continuing source of encouragement to those of us who knew the frustrations they experienced working within a complex organizational structure that was not always geared to their needs. My appreciation must also be expressed to the Program Coordinator, Joseph L. Boyd, Jr., and the Associate for Field Coordination, Samuel Barnett, whose work at ETS and in the field contributed greatly to the data collection effort. In addition, a debt must be acknowledged to the tester trainers, Anne M. Bussis, Rosalea Courtney, Diran Derman, Martha Friendly, Karla Goldman, Sandra Landes, Jean Orost, Masako Tanaka, Phyllis Ward, William Ward, and Patricia Warren, who spent many hours "on the road" travelling to and from the test centers, and who carefully trained the local testers to administer the instruments used in the study. Without their ability and willingness to function in a variety of roles, without their patience, and most of all, without their humor, there could have been no study. Gratitude must also be expressed for the monitoring and field consultation provided by ETS Regional Office staff, Junius Davis, Roderick Ironside, Chandra M. N. Mehotra, Daniel Norton, Santelia A. Knight, Robert E. Lambert, George Temp; and by Princeton Office staff, Anne M. Bussis and Jean Orost.

Thanks must also go, for their assistance in project direction, communications, and financial consultation, to Ann Jungeblut, Gina Wilson, Gray Sidwell, Joseph Bianchini, and Patricia Clyde. For measurement and analysis coordination, gratitude is due Ruth Ekstrom, Judith Grisham, F. Reid Creech, Charles Hall, Harry Harman, Richard J. Martz, Frederick Toms, Jesse H. Webb, and Victor Wichert; and thanks are due the women who painstakingly coded all the data presented here.

Throughout the study, Head Start Evaluation Research staff in Washington and the Head Start Research Advisory Committee have been our warmest critics and supporters as the situation demanded. Appreciation for their counsel and understanding is here expressed to Dr. Lois-ellin Datta and Mr. Richard Orton of the Head Start Office and to Dr. Urie Bronfenbrenner, Dr. Boyd McCandless, Dr. Alfred Yankauer, Dr. Edward Zigler, and the late Dr. Edward Suchman.

No report, of course, appears automatically on paper. It, too, is the product of many persons' efforts. I am grateful to Albert Beaton for his detailed explanation and description of the sample in Chapter 2. John Barone has described his well-designed data processing system in Chapter 3. The following ETS Research staff took major responsibility for describing and interpreting certain portions of the data found in Chapter 4; they are:

Anne Bussis	-Preschool Inventory (Caldwell) ETS Matched Pictures Language Comprehension Task I Seguin Form Board Test
Edward Chittenden	-Enumeration I
Walter Emmerich	-Boy-Girl Identity Task
Michael Lewis	-Fixation Time Risk-Taking 2 Vigor 1 & 2
Masaka Tanaka	-ETS Story Sequence, Part I
William Ward	-Matching Familiar Figures Test Motor Inhibition Test Open Field Test

Special gratitude goes to Walter Emmerich, Robert Linn, Samuel Messick, and William Ward for the time they took to review the various sections of the report, providing thoughtful and constructive criticism throughout, and to Elsa Rosenthal for her care in editing the final product. William Craycraft provided additional editorial assistance, and Ann King supervised the production of both Volumes 1 and 2. For providing daily coordination with analysis, research, and editorial staff, in addition to assistance with writing, proofing, and editing, special thanks must go to Ihor Wynnyckyj. The support provided by the ETS administration, particularly the administrative staff of the Developmental Research Division, has been particularly important.

Deepest gratitude, however, goes to the children and their families who participated in the study. The project staff appreciates the time mothers took to answer interview questions and to come to the testing center; we are grateful for their belief in us and in the purpose of the study. By continuing to work with them, we hope to share in bringing about meaningful educational change. We must not fail them nor fall short of that goal.

Virginia C. Shipman

Princeton, New Jersey
August 31, 1970

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CHAPTER 1--INTRODUCTION

The Longitudinal Study of Disadvantaged Children and Their First School Experiences was initiated in the spring of 1967 as a cooperative venture of the Head Start Research Office (Office of Economic Opportunity) and Educational Testing Service. The study brings together the concerns of the psychologist, sociologist, and educationist as it seeks answers to the questions: what are the components of early education that are associated with the cognitive, personal, and social development of disadvantaged children; what are the environmental and background variables that moderate these associations; and how do these moderators produce their influence?

The specific age-range chosen for study is 4 through 8, or from two years prior to entrance to the first grade through completion of third grade. Of particular concern is the study of those children attending Head Start and Follow Through programs and the identification of differential growth patterns that may be associated with certain characteristics of the compensatory programs.

Among the objectives related to these major questions are the following:

1. To determine the cognitive, personal, social, and physical characteristics of the disadvantaged children of the study prior to any formal preschool experience, and to relate these characteristics to home and community variables;

2. To determine the differential characteristics of families that do and do not send their children to Head Start and of the children themselves;

3. To identify the characteristics of preschool and primary grade programs in the locations of the study and to determine the relationships among these characteristics within and between the educational levels involved;

4. To determine the cognitive, social, and personal outcomes in children that seem to be associated with compensatory preschool experiences and to study the permanence of any such effects through the first three primary grades;

5. To relate teacher attitudes and styles of behavior toward the children to her background and to characteristics of the school, community, and the pupils themselves;

6. To obtain information about the characteristics of mobile versus nonmobile families and the children in them;

7. To determine relationships among physical, personal, social, and cognitive characteristics of children in each of the years of the study;

8. To describe changes in the structures of cognitive abilities and personal-social characteristics of these children over the crucial developmental period of the study;

9. To develop much needed and, it is hoped, generally useful techniques for the assessment of some of the individual and environmental characteristics under consideration.

Along with these general statements of what the study is about, it is important to state what the study is <u>not</u> intended to be. It is not intended to be an evaluation of Head Start -- at least not in the narrow sense implying a "go/no go" recommendation. There is no such thing as <u>the</u> Head Start program: there are many different programs with different combinations of characteristics. What are the characteristics which are particularly compatible with which children? Implications for policy and practice in Head Start programs will derive from making answers to this question convincing to government officials and educators. It is hoped that the study results will yield information useful for such educational decision-making at the kindergarten and primary grade levels as well.

So far, our research on what young children are like and what seems to influence their development has included about twelve hours of testing for each child, three hours of interviews with each of their mothers, an hour-and-a-half of observing each mother-child pair working together on tasks, and a physical examination for each child. In addition, there have been eighteen days of observing what happened in Head Start classes, three half-hours of watching each child during "free play" there, about four hours of each Head Start teacher's time to supply information about herself and the children in her classes, an hour from each Head Start aide, more than an hour of each Head Start Center Director's time to tell us about the centers in general, and many consultations with community agencies to obtain information about the environments in which the children live. For a more vivid and detailed account of the project's history, the reader is directed to Scarvia Anderson's introduction in an earlier report (ETS, PR-69-12).

To obtain a picture of the elementary schools which the study children will be attending, we also collected data in spring 1970 from all children, teachers, and administrators in the study-site schools.

The present report is the result of a supplement to Grant H-8256; it specifically describes initial differences between children who go on to Head Start, and those who don't, on half the measures administered in Year 1 in designated districts of three of the study sites -- Portland, St. Louis, and Trenton. Comparisons have been made in terms relating to the children themselves (such as sex, age, race, month of testing, test scores, and health information) and to their family situations. The children who now go to a pre-school program other than Head Start have been specifically indicated.

The results of the comparisons are also discussed in relation to (a) relevant additional information on characteristics of Head Start populations, published or provided by the Office of Child Development/Head Start; and (b) related findings in the literature on disadvantaged children, especially with respect to Head Start attendance or non-attendance. Presently, there is some evidence that the following variables are related in some measure to the decision to send a child to Head Start: Head Start attendance by an older sibling, the mother's employment status, the educational level of the parents, parental attitudes towards jobs and education, size of the family, race, and the child's sex. These variables (and a number of others) will be examined in the present report, as they bear on the decision under the "natural" circumstances which, in 1969, existed in districts of Portland, St. Louis, and Trenton.

Data of three major types were collected for the comparisons -- family information, health information, and test scores.

Family information: Do Head Start and non-Head Start families and households differ in easily detectable ways? "Easily detectable" is meant to imply both that the information is easy to obtain and that it is easy to score or code. This "manageability" is more typical of the usual status (or demographic) variables than of family process variables. Although the Longitudinal Study is dedicated to analyzing both, this initial report focuses on status variables alone because of the constraints of time and cost. The variables to be compared for families of Head Start and non-Head Start children include: mother's report of the child's activities and abilities, aspiration level for the child, education and occupation of the father and mother, "crowdedness" in the home, adult/child ratio, attendance of 5- and 6-year-old siblings in preschool programs, knowledge and use of community resources, participation in groups, family mobility, language spoken in the home, type of housing, availability and use of home resources, and "cooperativeness" of the mother in the interview.

Health information: Do those children who do and those who do not later attend Head Start differ in health history and general physical condition? The answers to this question will be based on items in the Child Health Record, completed on the basis of the doctor's examination or information provided by the mother. It is important to note that the information obtained was limited, and the administration of such measures is typically only crudely standardized. However, gross comparisons are certainly possible, and it seems especially important, in light of the total mission of Head Start, that information about the children not be limited to test and interview results.

Test scores: Are children in these districts who go to Head Start more knowledgeable or better able to cope in some specific ways than those who do not go to Head Start? The initial answer to this question will be based on scores from the following tests:

Cognitive, Stylistic

Boy-Girl Identity Task

Fixation Time

Hess and Shipman Toy Sorting Task

Matching Familiar Figures Test

Motor Inhibition Test

Risk Taking 2

Achievement, Skills

ETS Enumeration I

ETS Matched Pictures Language Comprehension I

ETS Story Sequence, Part I

Preschool Inventory (Caldwell)

Personal, Social

Brown IDS Self-Concept Referents Test

Open Field Test

Perceptual, Physical

Johns Hopkins Perceptual Test

Seguin Form Board

Vigor 1 and 2

Thus, it is the findings in these three areas (family information, health information, and test scores) that is the major focus of the report.

Volume 1 consists of five chapters, of which this introduction is the first. Chapter 2, Characteristics of the Sample, provides tables and statistics which indicate both the composition of the sample and the degree to which its major independent variables are confounded. Chapter 3, Methodology, presents a brief discussion of how the data were gathered, as well as a statement about the methods of analysis (such as coding, validity checks, computer procedures, etc.). In Chapter 4, Results, each investigator responsible for a particular task discusses his data. Chapter 5, Discussion and Conclusions, summarizes the general results of the analysis to date and presents a statement of plans for further analysis. Volume 2 comprises tables of data. Most of the tables are presented in a separate volume in order to facilitate the reader's references from text to tables.

It must be noted in closing that this is a preliminary report based on a limited sample. The data presented here should not be used to draw conclusions other than those discussed in the report. Further analysis is, of course, planned and will, it is hoped, provide a more comprehensive picture of disadvantaged children in the study sites. For the time being, however, it is strongly urged that the results presented here be viewed as only the first step in a long evaluative process.

CHAPTER 2--CHARACTERISTICS OF THE SAMPLE

Introduction

Chapter 2 describes the initial sample, the basis for selection of sites, and certain demographic characteristics (i.e., parents' occupational and educational level, race, and the study child's sex and later attendance in Head Start or other preschool programs) that emerged from the nonrandom selection of children and their families. We had anticipated disproportionate numbers of children in the above categories because of the basic design of the study. But, though the disproportion is a necessary characteristic of the sample, it does complicate interpretation of general means because the groups defined through a simple classification on a single variable will not have equal numbers of children in important related classifications. Thus, a major purpose of the chapter is to point out some of the disproportionalities and interactions among the various classifications and to caution the reader against unwarranted interpretations of the results reported later in Chapter 4.

Since the reader may find our necessarily detailed accounting somewhat burdensome, we have tried to lighten his labors by first presenting the following summary of major findings:

The attempt to gather data on children in the four selected sites was, in general, successful. At least partial data were obtained for a total of 1857 children, approximately 99% of the number of children (1882) originally expected from these four communities (ETS, PR-68-4).* However, the distribution of children from

*For the three sites discussed in this report, 242 children were not tested (140 of whom are from St. Louis). This accounts for the discrepancy in the N reported for the various measures in Volume 2. We expect, however, that many of these children were tested in Year 2.

site to site was different from our expectations, since we had expected St. Louis and Trenton to be our large sites, but found more children than we had anticipated in Lee County and Portland. The major problems were the slightly older ages at testing time of the St. Louis sample because we had extended their test-period (although the ages of the children are actually in the appropriate range) and the impossibility of collecting full data on all subjects.

There are, of course, a number of disproportionalities in the various classifications of importance. There are roughly twice as many blacks as whites, more boys than girls, more children who did not attend preschool programs, and various interactional differences such as different proportions of blacks and whites attending Head Start. These disproportionalities make the interpretation of general means quite difficult, for one must be concerned that an apparent effect is not due to important differences among other variables that do not cancel out in computing a general mean. The sample, then, dictates our caution in interpreting global measures.

Such differences in the numbers of children in various classifications is a necessary part, in some ways a desirable part, of the type of design used in the study. It would inevitably be impossible in such a study to identify and select equal or proportional cell sizes because of the very large number of classification variables; but even if the number of classification variables were to be kept small, the differential attrition over the life of the study would still result in an unbalanced sample. As recompense for the disproportionality, however, we have a measure, albeit crude, of the interrelationships among the classificatory variables at various sites.

The disproportionalities, in any case, do not prevent statistical estimation of effects that would be expected if the sample were proportional. Disproportionality does affect the power of tests to reject alternate hypotheses, but we feel this diminution is not of primary importance.

Some of the salient facts about the sample are these:

1. The number of subjects at different sites varies, with Lee County and Portland together constituting about 60% of the sample.
2. The sample is roughly 62% black.
3. Boys make up 52.6% of the sample. For Portland, Trenton, and St. Louis, boys make up 52.9% of the black sample and 48.6% of the white sample.
4. For the three sites in which children have already had the opportunity to attend Head Start, about 35% of the sample attended Head Start, 7% attended other preschool programs, and 58.5% had no known attendance in Head Start or other preschool programs.
5. Substantially more blacks than whites attend Head Start. While this varies by site, in the total sample only 16% of the children who attended Head Start are white.
6. The parents of the whites are, generally, better educated than the blacks', except in St. Louis where the reverse is true.
7. Although the fathers of both blacks and whites tend to be in blue-collar positions, a disproportionately large number of blacks are so classified.
8. Educational and occupational data were obtained for substantially fewer fathers than mothers--the difference between the number of

fathers and the number of mothers for whom data were obtained was greater for blacks than for whites, and for children who attended Head Start than for others.

The Selection of Sites

The sites were selected from areas where there is an opportunity for children to attend Head Start, thus areas with a substantial proportion of the population below the poverty level. Considerations of the costs and feasibility of the study determined that four communities could participate. The communities were selected according to the following criteria:

1. Program. To be considered, a school system must serve children who have had an opportunity to attend a year-long Head Start program. We preferred school systems with Follow-Through and tried for at least one without a kindergarten.
2. National representation. We wished for representation from different sections of the country and for some urban and rural variation.
3. Sufficient number of students. A community was considered eligible if it had a sufficient number of children in school and in the Head Start program. We attempted to obtain a reasonable racial mix and also took into account factors that might significantly change the area's characteristics during the life of the study.
4. Cooperation. The study would, of course, be impossible without the cooperation of the community, including its school officials and community leaders. We disqualified areas whose continued support we doubted.

As an added condition, we decided that one participating community should be relatively near to Princeton, thus making possible especially close interaction between ETS staff and a local site.

The selection procedure began with an examination of the list of 30 school systems having Follow Through programs at the time. The list was scrutinized carefully in terms of the other criteria, and several systems were selected for further investigation. A member of the ETS professional staff visited the respective sites for additional information, including evidence of willingness to engage in a relatively long-term study. Two cities--Portland, Oregon; and Racine, Wisconsin--were selected; however, Racine was later dropped to achieve regional balance.

Since the list of Follow Through schools contained no Southern rural system which met all our criteria, other lists of communities were reviewed, and Lee County, Alabama was selected. We then decided to select a large and a medium-size city from the Eastern and Central regions of the country. Using random numbers, we prepared a list of eligible pairs of cities to guide our selection. Three pairs of cities were chosen as adequately meeting our criteria: Pittsburgh and Racine; Baltimore and Racine; and Trenton and St. Louis. Since the Trenton and St. Louis combination met our condition that one site be near Princeton, this pair was finally selected.

The study sites are these:

a. Lee County, Alabama. Lee County is mainly a Southern rural area. There are two small cities, Auburn and Opelika, within the County, but outside city limits the area is distinctly rural and poor. Auburn is dominated by its university, which is a major employer in that city. Opelika has a few small factories and serves as the county seat. The population is approximately 33% black (OEO, 1970).

b. Portland, Oregon* Portland is a medium-size city on the West Coast. Its population is fairly stable having risen from 373,000 in 1960 to 375,000

*The statistics reported are based on 1970 U. S. Bureau of Census figures supplied by Opinion Research Corporation, Princeton, N. J.

in 1970. About 6% are blacks. Unlike the population of other large cities, Portland whites have not fled to Suburbia. The population is better educated than in many other parts of the country, and poverty in Portland is not as intense as in our other sites.

c. St. Louis, Missouri.* St. Louis is a central city, with declining population, amid quickly growing suburbs. The city's population dropped from about 750,000 in 1960 to 607,000 in 1970. As the white population moved out of the city, the non-white population increased from approximately 29% in 1960 to 43% in 1965; it is believed to be nearly 50% in 1970. Largely industrial, the city is also a trading center.

d. Trenton, New Jersey.* Trenton is a small city on the Eastern seaboard. The city's population dropped slightly from 114,000 in 1960 to 102,000 in 1970. The non-white population was estimated to be 35%-38% of the total population in 1968. The city is industrial and also serves as the state capital.

Within these communities, school districts have been selected for participation. It is in these school districts that the longitudinal sample is expected to be enrolled when they reach third grade. The schools are, of course, located near Head Start centers.

In each school district, the children of approximately $3\frac{1}{2}$ to $4\frac{1}{2}$ years of age were included in the initial longitudinal sample, although some had to be omitted, including children from families speaking a foreign language or those with severe physical handicaps (e.g., cerebral palsy). The sample was identified through a complete canvass of each neighborhood and an enumeration of the resident children.

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*The statistics reported are based on 1970 U. S. Bureau of Census figures supplied by local city officials.

Generality: These four sites were not a random sample of a population of communities nor were the children tested in these sites a random sample of children in these areas or of any definable population of disadvantaged children anywhere; thus, in analyzing the following data, we cannot use the mechanics of statistical inference theory without exercising particular caution. To be specific, these data do not allow us to extrapolate to proportions of Head Start children in general nor to make statements such as "The mean score of Head Start children is...," for the sampling procedure does not justify this type of interpretation. We chose to proceed as we did for many logistical reasons and also for the assurance of variation in community type--something that could not be expected had we used a small random sample. This caveat on generality therefore warns the reader about the use of usual statistical distributions. Statistics such as Snedecor's F must be viewed as a signal-to-noise ratio in this particular sample; it may be used as a population hypothesis-testing statistic only upon very strong assumptions about the relationship of this sample to the population.

But a caveat on this caveat may also be in order: that is, the power of overwhelming evidence should not be minimized or overlooked. If a major effect should take place in all four sites or should there be large differences among sites, such events might possibly be evidence of great importance. Thus, as in all good scientific procedure, a striking finding must be replicated, perhaps with a tighter experiment, and its validity attested to by its continued recurrence.

In this study, site variation is confounded with region of the country, urbanness, socioeconomic status, and perhaps many other variables. For example, a difference between the means of Portland and Lee County might be differences between urbanness and ruralness, between Northwest and Southeast culture, or between the children of moderate-income families and low-income families. Thus, in looking at simple mean differences between sites, we cannot be sure which of the several variables is most explanatory.

The problem in interpreting means is quite general. For example, let us say that there is a variable on which girls do better than boys. If we compute a mean value for two sites, and the number of boys and girls in the two sites is identical (or at least proportional), then the advantage of girls over boys will be appropriately balanced in the two sites and the means of the sites will be interpretable. If one site, however, had a disproportionate number of girls and the other of boys, then we would expect the site with the oversupply of girls to achieve higher scores because of this excess and not necessarily because of other differences. Thus, in comparing pre-existing groups, one should not interpret differences in means without measuring, or at least speculating on, the myriad variables on which the groups being compared differ.

A mean is affected by variables that are <u>not</u> measured as well as by those that are, and unmeasured variables, unfortunately, cannot be taken properly into account. However, the investigators in this study attempted to measure a very broad range of individual attributes so that there could be little chance of their overlooking a variable of major importa .

If these other important variables are accurately measured, then they may be justifiably included in a general statistical model and used as adjustments in interpreting main effects. In that way the overall mean values would not be interpreted directly or in isolation. In general, one should not interpret overall means on any variables until he has looked at their interactions with other explanatory variables. This argument implies that where the mechanics of statistical inference are appropriate, we use either a multiway analysis of variance or covariance model; if we do so, our estimates of the main effects will be unbiased and the *F* tests of statistical hypotheses appropriate.

F tests are most powerful if the design is balanced--that is, if there are equal or proportional numbers in the cells in a multiway layout. In a study such as the present one, such balance is not possible except by randomly discarding data. This would be unwise, for we can still adjust for imbalance and estimate main effects without bias. If the design is unbalanced, however, the significance tests lose power; that is, although the probability of falsely rejecting an hypothesis of no effect (type I error) is some constant, say .05, the probability of not rejecting the hypothesis when the effect is not zero (type II error) is less than optimal. That is to say, if the hypothesis that some constant is equal to zero should be untrue, we want to have a good chance of rejecting that hypothesis. Let us say we are interested in testing whether a variable y is related to a variable x_1 in a statistical model that includes the variable x_2; then the probability of rejecting the null hypothesis is influenced by the magnitude of the constant

$$k = \beta^2 N(\sigma_1^2 - r_{12}^2/\sigma_2^2)$$

where β is the true value of the parameter to be estimated, N is the sample size, σ_1^2 and σ_2^2 are the variance of x_1 and x_2, respectively, and r_{12} is the correlation between x_1 and x_2. If β is 0, then this entire constant is zero regardless of other factors; if β is greatly different from 0, then we shall reject the hypothesis that β is 0 with considerable certainty. The significance test becomes more powerful as this constant grows larger. If x_1 and x_2 are balanced, then $r_{12}^2 = 0$, and this constant becomes $k = \beta^2 N \sigma_1^2$, which is larger than the k above for the unbalanced (or general) case. Power can also be increased by enlarging the sample size or the variance of x_1 or x_2 . We prefer to use all the data in estimation; for we prefer power from an increase in sample size to the power achieved by setting $r_{12} = 0$ with a loss in sample size.

The Basic Sample

The number of children on whom information has been collected is shown in Table 2-1. These are the children who fit all the qualifications for membership in the sample and about whom we have collected at least one piece of information in the 1969 testing program. In some cases the data available for the children included are incomplete.

We note that there are some fairly substantial differences in sample size by site; Lee County and Portland have over 500 cases, whereas Trenton and St. Louis have under 400. Consequently, there is a need for caution in interpreting statistics computed over all subjects since any factors associated with site are disproportionately represented.

Racial composition: Racial composition varies strikingly from site to site. The basic numbers are shown in Table 2-2. Table 2-3 shows these same figures as percentages of the students in a community. We see that the total sample is 62.4% black and 36.6% white, with a few (1.0%) classified as "Other" (i.e., Puerto Rican, American Indian). The proportion of blacks varies sharply from site to site with as many as 77.3% of the Trenton sample being black, and only 46.9% in Lee County. Therefore, general comparisons from site to site will inevitably require consideration of racial differences.

Table 2-1

Number of Subjects in Each Site

Site	No. of Subjects	%
Lee County	591	31.8
Portland	536	28.9
St. Louis	347	18.7
Trenton	383	20.6
TOTAL	1857	100.0

Table 2-2

Racial Composition in Sites

	BLACK	WHITE	OTHER	TOTAL
Lee County	277	312	2	591
Portland	347	178	11	536
St. Louis	239	107	1	347
Trenton	296	83	4	383
TOTAL	1159	680	18	1857

Table 2-3

Racial Composition in Sites by Percentages

	BLACK	WHITE	OTHER	TOTAL
Lee County	46.9	52.8	.3	100
Portland	64.7	33.2	2.1	100
St. Louis	68.9	30.8	.3	100
Trenton	77.3	21.7	1.0	100
TOTAL	62.4	36.6	1.0	100

Sex differences: As one might expect, there are small differences in the numbers of boys and girls from site to site. Summary statistics are in Table 2-4 and are expressed in percentages in Table 2-5. The percentage of boys and

Table 2-4

Number of Children in Each Site, Classified by Sex

	Boys	Girls	Total
Lee County	323	268	591
Portland	285	251	536
St. Louis	175	172	347
Trenton	195	188	383
TOTAL	978	879	1857

girls is about equal in Trenton and St. Louis, but there is a disproportionately large number of boys in both Lee County and in Portland. The result is that the total sample is 53% boys and 47% girls. This difference is sufficient to warrant care in making general comparisons of Lee County and Portland with Trenton and St. Louis, but it does not appear as serious a matter as the confounding of some of the other variables.

Table 2-5

Percentage of Children in Each Site, Classified by Sex

	Boys	Girls	Total
Lee County	54.6	45.3	99.9
Portland	53.1	46.8	99.9
St. Louis	50.4	49.5	99.9
Trenton	50.9	49.0	99.9
TOTAL	52.6	47.3	99.9

Preschool attendance: The simple statistics for attendance in Head Start and other preschool programs are shown in Table 2-6 and the percentages are shown in Table 2-7. Lee County is not included here because Head Start was not available to Lee County students until their kindergarten year.

Table 2-6

Number Attending Head Start and Other Preschool Programs, Classified by Site

	HS	PS	OTHER	TOTAL
Lee County	-	-	-	-
Portland	204	51	281	536
St. Louis	121	5	221	347
Trenton	112	32	239	383
TOTAL	437	88	741	1266

Table 2-7

Percentages Attending Head Start and Other Preschool Programs, Classified by Site

	HS	PS	OTHER	TOTAL
Lee County	-	-	-	-
Portland	38.1	9.5	52.4	100.0
St. Louis	34.9	1.4	63.7	100.0
Trenton	29.2	8.3	62.4	100.0
TOTAL	34.5	7.0	58.5	100.0

The children are divided into three groups. The first group consists of children who attended Head Start during 1969-70. Information was taken from Head Start registers in the communities, and the number given is the minimum number of Head Start children. The second group, other preschool (PS), consists of children who are known to have attended other preschool or nursery programs during 1969-70, so this too is a minimum number. Persons who were not on Head Start or other preschool lists are in the "other" category; it is likely that many of these students attended neither Head Start nor other preschool programs, but this category also includes children who may have moved out of the community and were enrolled in Head Start elsewhere, or includes those who are enrolled in Head Start out of the general area. As the children in the "other" category are followed up, they may be reassigned to the Head Start or other preschool categories.

Across the three sites one-third of the children attended Head Start. However, we note that the number of students in the Head Start category at the individual site runs from 29% to 38% and the number in the preschool category runs from 1.4% to 9.5%. As we shall see later, there are substantial interactions between race and Head Start attendance which vary from site to site; this may perhaps make Head Start children incomparable to other children at the different sites.

Cross-Classification by Major Variables

The following section contains tables displaying all cross-classifications of the major variables: site, race, sex, and Head Start attendance for Portland, St. Louis, and Trenton.

Complete cross-classification: Table 2-8 contains a complete cross-classification by the four major variables. The Lee County sample has been omitted since the Head Start information is not yet relevant. Although there are a substantial number of void cells, there are none in the areas of particular interest. Void cells occur only in the cells representing "other preschool programs" and in the "other" racial category. It is therefore possible to estimate a mean value for each cell of black or white children by Head Start or by known preschool program for any measured variable, although the means of the largest cell (Portland's 90 black males in the "other" category) will be much better estimated than the smallest cells (Trenton's two white males--or females--in the Head Start category).

Race by sex classification: Since there are often differences in performance level of boys and girls, we now ask whether there is the same percentage of black boys as white boys and black girls as white girls. The percentages are shown in Table 2-9.

Table 2-8

Subjects Classified by Site, Preschool Program, Race, and Sex

		HS				PS				OTHER				TOTAL				
		B	W	O	T	B	W	O	T	B	W	O	T	B	W	O	T	
Portland	M	89	15	1	105	20	5	0	25	90	61	4	155	199	81	5	285	M
	F	79	17	3	99	14	12	0	26	55	68	3	126	148	97	6	251	F
	T	168	32	4	204	34	17	0	51	145	129	7	281	347	178	11	536	T
St. Louis	M	44	19	0	63	0	0	0	0	74	37	1	112	118	56	1	175	M
	F	43	15	0	58	4	1	0	5	74	35	0	109	121	51	0	172	F
	T	87	34	0	121	4	1	0	5	148	72	1	221	239	107	1	347	T
Trenton	M	58	2	0	60	14	0	0	14	78	40	3	121	150	42	3	195	M
	F	50	2	0	52	15	3	0	18	81	36	1	118	146	41	1	188	F
	T	108	4	0	112	19	3	0	32	159	76	4	239	296	83	4	383	T
TOTAL	M	191	36	1	228	34	5	0	39	242	138	8	388	467	179	9	655	M
	F	172	34	3	209	33	16	0	49	210	139	4	353	415	189	7	611	F
	T	363	70	4	437	67	21	0	88	452	277	12	741	882	368	16	1266	T

Table 2-9

Percentages of Male and Female Children by Race and Site

		Male	Female	N
Portland	Black	57.3	42.7	347
	White	45.5	54.5	178
	Other	45.5	54.5	11
	Total	53.2	46.8	536
St. Louis	Black	49.4	50.6	239
	White	52.3	47.7	107
	Other	100.0	.0	1
	Total	50.4	49.6	347
Trenton	Black	50.7	49.3	296
	White	50.6	49.4	83
	Other	75.0	25.0	4
	Total	50.9	49.1	383
TOTAL	Black	53.0	47.0	882
	White	48.6	51.4	368
	Other	56.2	43.8	16
	Total	51.7	48.3	1266

Overall, the boys are a majority in the black sample and a minority in the white. This relationship is not consistent over sites; in Trenton, the proportion of boys is slightly over 50% for both black and white; in Portland, a large percentage (57.3%) of the blacks are boys, whereas only 45.5% of the whites are boys; in St. Louis the sample of blacks is less than 50% male, whereas the white sample is 52.3% male. These differences again dictate taking caution in interpreting general means, for otherwise Portland would have a special advantage on variables where white girls excelled.

The "other" race category varies widely, but the cell sizes are too small to interpret.

Race by preschool attendance classification: Table 2-10 presents the basic statistics, classified by race, for the number of students who attended Head Start or other preschool programs or were not known to have attended a preschool program. The information is separated by site. Table 2-11 contains the information in percentage form.

We first note that there are 70 white students attending Head Start. This is about 6% of the total sample or about 20% of the white students in the sample. On the other hand, a much larger percentage (41%) of blacks in the sample attended Head Start. This racial difference is especially marked in Trenton where only four out of 76 whites attended Head Start. Thus, we must consider Head Start in Trenton essentially a black program. In Portland and in St. Louis there are, respectively, 32 and 34 white children in Head Start; this is substantial enough to work with for some purposes in both sites; it is a relatively large proportion in St. Louis and relatively close to what would be expected from the marginals.

All in all, one will need to be very careful in making overall comparisons of Head Start children with non-Head Start children, since race is disproportionately represented among these groupings.

Table 2-10

Number Attending Preschool Programs, Classified by Race and Site

		Black	White	Other	Total
	HS	168	32	4	204
Portland	PS	34	17	0	51
	Other	145	129	7	281
	Total	347	178	11	536
	HS	87	34	0	121
St. Louis	PS	4	1	0	5
	Other	148	72	1	221
	Total	239	107	1	347
	HS	108	4	0	112
Trenton	PS	29	3	0	32
	Other	159	76	4	239
	Total	296	83	4	383
	HS	363	70	4	437
TOTAL	PS	67	21	0	88
	Other	452	277	12	741
	Total	882	368	16	1266

Table 2-11

Percentages Attending Preschool Programs, Classified by Race and Site

		Black	White	Other	Total
Portland	HS	31.3	6.0	7	38.0
	PS	6.3	3.2	0	9.5
	Other	27.1	24.1	1.3	52.4
	Total %	64.7	33.2	2.0	99.9
St. Louis	HS	25.1	10.0	0	34.9
	PS	1.2	.3	0	1.4
	Other	42.7	20.7	.3	63.9
	Total %	68.9	30.8	.3	100.0
Trenton	HS	28.2	1.0	0	29.2
	PS	7.6	.8	0	8.4
	Other	41.5	19.8	1.0	62.4
	Total %	77.3	21.7	1.0	100.0
TOTAL	HS	28.7	5.5	.3	34.5
	PS	5.3	1.7	0	7.0
	Other	35.7	21.9	.9	58.5
	Total %	69.7	29.1	1.3	100.0

Sex by preschool attendance classification: Table 2-12 shows the percentage of children who attended Head Start, other preschool programs, or neither. This table is classified by sex. Overall, 34.8% of the boys and 34.2% of the girls attended Head Start. There is not a consistent pattern over the three sites. In Trenton and St. Louis a larger percentage of boys attended, whereas in Portland a larger percentage of girls attended Head Start. In all cases the differences in proportions are slight.

Socioeconomic Variables

We have selected for investigation four variables that are components of socioeconomic status. They are mother's and father's education and mother's and father's occupation. We have chosen to present the mother's variables first since these are available for a substantially larger sample.

Mother's education: Data are available for mothers of 1144 of the 1266 children in the three sites. The index of mother's education used as a variable here is highest grade attended. Mean values for the different sites are shown in Table 2-13.

Mothers of children in the Portland sample have the highest average grade attended--11.59--or a half year under high school graduation. The Trenton sample averages 10.58 grades, and the St. Louis sample is lowest with an average of 9.64 grades. These averages and the numbers on which they are based are cross-classified by race and preschool attendance in Table 2-14.

First, we note that the mothers of students who go to the other preschool programs are in all cases (except where there is only one case in the sample) more highly educated than mothers of either Head Start children or of those with no known preschool program. This holds for both races and over all sites. Overall, the mothers of these children average a year higher grade attended than the other mothers.

Table 2-12

Percentages of Males and Females

Attending a Preschool Program

		% in HS	% in PS	% in Other	Number
	Male	36.8	8.8	54.3	285
Portland	Female	39.4	10.4	50.1	251
	M + F	38.1	9.5	52.4	536
	Male	36.0	0.0	64.0	175
St. Louis	Female	33.7	2.9	63.3	172
	M + F	34.9	1.4	63.6	347
	Male	30.8	7.2	62.1	195
Trenton	Female	27.7	9.6	62.7	188
	M + F	29.2	8.4	62.4	383
	Male	34.8	6.0	59.2	655
TOTAL	Female	34.2	8.0	57.7	611
	M + F	34.5	7.0	58.5	1266

In general, the mothers of the white children have approximately a half year more education than the mothers of black children, but this pattern is not consistent throughout the sites. In both Trenton and Portland the white mothers are better educated, but in St. Louis the mothers of the black children have, on the average, over a year more education. This change in relationship must be considered in site-to-site comparisons.

Table 2-13

Mother's Education Classified by Site

		Average Highest Grade Attended	
	N	Mean	S.D.
Portland	511	11.59	2.23
St. Louis	276	9.64	2.35
Trenton	357	10.58	2.09
TOTAL	1144	10.80	2.35

Mothers of the Head Start children have about three-tenths of a year less schooling than the mothers of the children in the no-known-preschool category. The difference is found to varying degrees for both races and within all of the different sites.

From the observed variation in mother's education, then, we see that the more educated mothers tend to send their children to other preschool programs and that the poorly educated, both black and white, tend to send their children to Head Start. The whites in the sample are on the average slightly more educated than the blacks, except in St. Louis, where the blacks are better educated.

Table 2-14

Average Highest Grade Attended by Mother: Classified by Site, Race, and Child's Preschool Attendance

		Head Start (N) Mean	Other (N) Mean	Preschool (N) Mean	Total (N) Mean
	White	(30) 11.70	(126) 12.29	(16) 13.57	(172) 12.30
Portland	Black	(162) 11.07	(143) 11.23	(34) 11.97	(339) 11.23
	Total	(192) 11.17	(269) 11.73	(50) 12.54	(511) 11.60
	White	(22) 7.91	(62) 9.21	(1) 8.50	(85) 8.86
St. Louis	Black	(65) [illegible] 92	(122) 10.00	(4) 10.50	(191) 9.98
	Total	(87) 9.41	(184) 9.73	(5) 10.00	(276) 9.63
	White	(3) 9.63	(73) 11.09	(3) 12.33	(79) 11.08
Trenton	Black	(100) 10.13	(152) 10.43	(26) 11.65	(278) 10.44
	Total	(103) 10.12	(225) 10.64	(29) 11.72	(357) 10.58
	White	(55) 10.07	(261) 11.22	(20) 13.10	(336) 11.14
TOTAL	Black	(327) 10.55	(417) 10.58	(64) 11.75	(808) 10.66
	Total	(382) 10.48	(678) 10.82	(84) 12.07	(1144) 10.80

Father's education: The information on father's education was available for 810 of the 1266 children. The proportion of fathers for which this information is available is markedly different for blacks and whites; in the white sample, information was available for 91% as many fathers as mothers, whereas in the black sample data are available for only 65% as many. As with mother's education, the measure of education is the highest grade attended. The mean values for different sites are shown in Table 2-15.

The average father has reached a slightly lower grade than reached by the average mother in Trenton, a slightly higher grade in Portland, and almost exactly the same grade in St. Louis.

The average highest grade attended by fathers is shown in Table 2-16, cross-classified by preschool attendance, race, and site. The overall pattern is largely the same as for mother's education.

We see that the children who attend other preschool programs have fathers who have attained a higher grade in school than either the fathers of the Head Start children or those in the "other" category. This holds true for both black and white students. The white fathers on the average have attained a higher grade than black fathers, except in St. Louis.

Table 2-15

Father's Education Classified by Site

		Average Highest Grade Attended	
	N	Mean	S.D.
Portland	392	11.76	2.78
St. Louis	198	9.65	2.38
Trenton	241	10.29	2.72
TOTAL	831	10.84	2.82

Table 2-16

Average Highest Grade Attended by Father: Classified by Site, Race, and Child's Preschool Attendance

		Head Start (N) Mean	Other (N) Mean	Preschool (N) Mean	Total (N) Mean
	White	(25) 13.16	(116) 12.46	(13) 14.69	(154) 12.77
Portland	Black	(99) 10.87	(114) 11.13	(25) 12.00	(238) 11.11
	Total	(124) 11.33	(230) 11.80	(38) 12.92	(392) 11.76
	White	(19) 9.47	(58) 8.83	(1) 6.00	(78) 8.95
St. Louis	Black	(39) 9.59	(78) 10.37	(3) 10.33	(120) 10.12
	Total	(58) 9.55	(136) 9.71	(4) 9.25	(198) 9.65
	White	(3) 10.33	(67) 11.21	(2) 13.00	(72) 11.22
Trenton	Black	(55) 9.22	(98) 10.22	(16) 10.37	(169) 9.90
	Total	(58) 9.27	(165) 10.62	(18) 10.66	(241) 10.29
	White	(47) 11.49	(241) 11.24	(16) 13.94	(304) 11.42
TOTAL	Black	(193) 10.14	(290) 10.62	(44) 11.30	(527) 10.50
	Total	(240) 10.40	(531) 10.90	(60) 12.00	(831) 10.84

Mother's occupation: Mother's occupation is coded as the three-digit code used by the Census Bureau; however, for the purposes of this report, only the first digit will be reported. An eleventh group was added to the 10 groups used by the Census Bureau to accommodate the unemployed. The coding used was:

01 Professionals
02 Farm Owners and Managers
03 Managers and Proprietors
04 Clerical and Kindred Workers
05 Sales Workers
06 Craftsmen, Foremen, Kindred Workers
07 Operatives and Kindred Workers
08 Service Workers (including private household workers)
09 Farm Laborers and Foremen
10 Laborers, Except Farm and Mine
11 Unemployed

For purposes of simplicity, we have grouped categories 1 through 5 under the general title "white collar" and categories 6 through 10 under the general category "blue collar." This rough categorization is useful for descriptive purposes; full information on the 11-category code is shown in Appendix A (Tables A-1 through A-4) for race x sex x site x preschool attendance.

Table 2-17 summarizes the analyses of basic white-collar/blue-collar data in each site by race and by category of preschool attendance. Note that some of the cells have rather small membership and must be interpreted with care.

Table 2-18 presents a percentage summary of mother's occupation, for black and white children. The bottom margin contains the number on which the percentages were computed. We note first that a substantial proportion of white mothers are not employed, presumably remaining at home to care for the

Table 2-17

Mother's Occupation Classified by Site, Race, and Child's Preschool Attendance

Portland

	White				Black				Total			
	HS	O	PS	T	HS	O	PS	T	HS	O	PS	T
White-Collar	3	21	2	26	21	26	14	61	24	47	16	87
Blue-Collar	3	20	2	25	41	43	6	90	44	63	8	115
Unemployed	23	73	11	107	94	68	15	177	117	141	26	284
TOTAL	29	114	15	158	156	137	35	328	185	251	50	486

St. Louis

	White				Black				Total			
	HS	O	PS	T	HS	O	PS	T	HS	O	PS	T
White-Collar	0	8	0	8	4	9	1	14	4	17	1	22
Blue-Collar	0	9	1	10	18	47	1	66	18	56	2	76
Unemployed	16	52	0	68	39	70	2	111	55	122	2	179
TOTAL	16	69	1	86	61	126	4	191	77	195	5	277

Trenton

	White				Black				Total			
	HS	O	PS	T	HS	O	PS	T	HS	O	PS	T
White-Collar	0	7	1	8	6	15	9	30	6	22	10	38
Blue-Collar	0	6	1	7	21	39	12	72	21	45	13	79
Unemployed	3	59	1	63	65	86	5	156	68	145	6	219
TOTAL	3	72	3	78	92	140	26	258	95	212	29	336

Three Sites Combined

	White				Black				Total			
	HS	O	PS	T	HS	O	PS	T	HS	O	PS	T
White-Collar	3	36	3	42	31	50	24	105	34	86	27	147
Blue-Collar	3	35	4	42	80	129	19	228	83	164	23	270
Unemployed	42	184	12	238	198	224	22	444	240	408	34	682
TOTAL	48	255	19	322	309	403	65	777	357	658	84	1099

Table 2-18

Percentage of Mothers in Occupational Group,

Classified by Site and Race

		White	Black	Total
Portland	White-Collar	16.5	18.6	17.9
	Blue-Collar	15.8	27.4	23.7
	Unemployed	67.7	54.0	58.4
	Total	158	328	486
St. Louis	White-Collar	9.3	7.3	7.9
	Blue-Collar	11.6	34.6	27.4
	Unemployed	79.1	58.1	64.6
	Total	86	191	277
Trenton	White-Collar	10.3	11.6	11.3
	Blue-Collar	9.0	27.9	23.5
	Unemployed	80.8	60.5	65.2
	Total	78	258	336
TOTAL	White-Collar	13.1	13.5	13.4
	Blue-Collar	13.1	29.3	24.6
	Unemployed	73.9	57.1	62.1
	Total	322	777	1099

children. Overall, 73.9% of the white mothers stay home as opposed to 57.1% of the black mothers. A large black-white difference in the proportion of mothers unemployed occurs in all sites. Of the white mothers who are employed, roughly the same percentages have white-collar and blue-collar jobs, but a substantially larger proportion of employed black mothers are in blue-collar jobs.

Table 2-19 cross-classifies the occupation of the mother by the child's preschool attendance. The figures are presented separately for white and black children. The percentages add up horizontally, and the number of cases on which the percentage is based is shown in the right-hand margin. This table reflects the earlier finding that a relatively small percentage of the white children attend Head Start and an even smaller percentage attend other preschool programs. There is very little difference in the attendance of white children in Head Start or other preschool programs between white-collar workers' children and blue-collar workers', although a substantially larger percentage of the children of unemployed mothers attend Head Start than of employed mothers. Thus it would seem that employed white mothers are not taking advantage of Head Start for their children, except in Portland, although a modest percentage of the children of unemployed white mothers do attend.

The pattern for black children is different. Overall, about 30% of the children of black mothers in white-collar jobs attend Head Start, 35% of blue-collar mothers' children, and 44.6% of those who are not employed. In all sites the black children of mothers with white-collar occupations tend to enroll in other preschool programs, whereas very few of the unemployed mothers send their children to other preschool programs. All in all, the differences

Table 2-19

Percentage of Mother's Occupation Group Classified by Site,

Race and Child's Preschool Attendance

Portland

	White HS	White O	White PS	White Total	Black HS	Black O	Black PS	Black Total
White-Collar	11.5	80.8	7.7	26	34.4	42.6	23.0	61
Blue-Collar	12.0	80.0	8.0	25	45.6	47.8	6.7	90
Unemployed	21.5	68.2	10.3	107	53.1	38.4	8.5	177
Total	18.4	72.2	9.5	158	47.6	41.8	10.7	328

St. Louis

	White HS	White O	White PS	White Total	Black HS	Black O	Black PS	Black Total
White-Collar	0	100.0	0	8	28.6	64.3	7.1	14
Blue-Collar	0	90.0	10.0	10	27.3	71.2	1.5	66
Unemployed	23.5	76.5	0	68	35.1	63.1	1.8	111
Total	18.6	80.2	1.2	86	31.9	66.0	2.1	191

Trenton

	White HS	White O	White PS	White Total	Black HS	Black O	Black PS	Black Total
White-Collar	0	87.5	12.5	8	20.0	50.0	30.0	30
Blue-Collar	0	85.7	14.3	7	29.2	54.2	16.7	72
Unemployed	4.8	93.7	1.6	63	41.7	55.1	3.2	156
Total	3.8	92.3	3.8	78	35.7	54.3	10.1	258

Three Sites Combined

	White HS	White O	White PS	White Total	Black HS	Black O	Black PS	Black Total
White-Collar	7.1	85.7	7.1	42	29.5	47.6	22.9	105
Blue-Collar	7.1	83.3	9.5	42	35.1	56.6	8.3	228
Unemployed	17.6	77.3	5.0	238	44.6	50.5	5.0	444
Total	14.9	79.2	5.9	322	39.8	51.9	8.4	777

in Head Start attendance seem to be related to racial differences, but within the black sample there is a greater tendency for the children of mothers employed in white-collar jobs to attend other preschool programs.

Father's occupation: The occupations of fathers were classified into 10 groups using the Census Bureau categories. We have added an eleventh category for the unemployed. The classifications are:

01 Professionals
02 Farm Owners and Managers
03 Managers and Proprietors
04 Clerical and Kindred Workers
05 Sales Workers
06 Craftsmen, Foremen, Kindred Workers
07 Operatives and Kindred Workers
08 Service Workers (including private household workers)
09 Farm Laborers and Foremen
10 Laborers, Except Farm and Mine
11 Unemployed

Complete data on father's occupation are shown in Appendix A (Tables A-5 through A-8) for race x sex x site x preschool attendance.

We have again for simplicity grouped categories 1 to 5 as white collar and 6 to 10 as blue collar. These data are shown in Table 2-20, analyzed by race and category of preschool attendance, separately for each site. There are many rather small cells which are difficult to interpret.

Table 2-21 presents percentages of white-collar, blue-collar, and unemployed fathers, separated by race and by site. The number of persons on whom the percentages were based is shown as a lower margin of each table.

We first note that a substantially larger proportion of the black children have unemployed fathers. The proportion is 10.8% overall for blacks and 3.3%

Table 2-20

Father's Occupation: Classified by Site,

Race and Child's Preschool Attendance

Portland

	White HS	White O	White PS	White T	Black HS	Black O	Black PS	Black T	Total HS	Total O	Total PS	Total T
White-Collar	9	52	9	70	14	24	8	46	23	76	17	116
Blue-Collar	12	64	2	78	72	75	16	163	84	139	18	241
Unemployed	2	2	1	5	9	10	2	21	11	12	3	26
TOTAL	23	118	12	153	95	109	26	230	118	227	38	383

St. Louis

	White HS	White O	White PS	White T	Black HS	Black O	Black PS	Black T	Total HS	Total O	Total PS	Total T
White-Collar	0	6	0	6	7	4	0	11	7	10	0	17
Blue-Collar	13	55	0	68	21	60	1	82	34	115	1	150
Unemployed	1	3	1	5	6	11	1	18	7	14	2	23
TOTAL	14	64	1	79	34	75	2	111	48	139	3	190

Trenton

	White HS	White O	White PS	White T	Black HS	Black O	Black PS	Black T	Total HS	Total O	Total PS	Total T
White-Collar	1	27	0	28	3	6	2	11	4	33	2	39
Blue-Collar	2	40	2	44	44	78	12	134	46	118	14	178
Unemployed	0	0	0	0	3	12	0	15	3	12	0	15
TOTAL	3	67	2	72	50	96	14	160	53	163	16	232

Three Sites Combined

	White HS	White O	White PS	White T	Black HS	Black O	Black PS	Black T	Total HS	Total O	Total PS	Total T
White-Collar	10	85	9	104	24	34	10	68	34	119	19	172
Blue-Collar	27	159	4	190	137	213	29	379	164	372	33	569
Unemployed	3	5	2	10	18	33	3	54	21	38	5	64
TOTAL	40	249	15	304	179	280	42	501	219	529	57	805

Table 2-21

Percentage of Fathers in Occupational Group

Classified by Site and Race

		White	Black	Total
	White-Collar	45.8	20.0	30.3
Portland	Blue-Collar	51.0	70.9	62.9
	Unemployed	3.3	9.1	6.8
	Total	153	230	383
	White-Collar	7.6	9.9	8.9
St. Louis	Blue-Collar	86.1	73.9	78.9
	Unemployed	6.3	16.2	12.1
	Total	79	111	190
	White-Collar	38.9	6.9	16.8
Trenton	Blue-Collar	61.1	83.8	76.7
	Unemployed	0	9.4	6.5
	Total	72	160	232
	White-Collar	34.2	13.6	21.4
TOTAL	Blue-Collar	62.5	75.6	70.7
	Unemployed	4.4	10.8	8.0
	Total	304	501	805

for whites. The finding of a substantially larger percentage of unemployed fathers of black children is consistent from site to site. Of the employed fathers, there is a larger proportion of blue-collar than white-collar workers for both races and in all sites, but the total of blue-collar employees outnumbers white-collar employees about 2 to 1 among the whites and nearly 6 to 1 among the blacks (see Table 2-21). St. Louis is an exception where there is a larger tendency for the fathers of white children to be employed in blue-collar occupations than for the fathers of black children.

Table 2-22 presents the proportion of fathers in each type of occupation whose children attend Head Start, other preschool programs, or no known preschool program. This information is displayed separately by race. The right-hand margin of each table shows the numbers from which the percentages were computed.

The number of unemployed white fathers is only 10, so we shall not discuss percentages based on such a small sample. There does not seem to be any differential pattern for white-collar and blue-collar white fathers in sending their children to preschool programs. The distribution of fathers in white-collar and blue-collar jobs does not differentiate strongly among blacks either, except in St. Louis, where a disproportionate number of children of black white-collar fathers attend Head Start and children of black blue-collar fathers attend no known preschool program. And, except in St. Louis, there is a tendency for the children of white-collar fathers to attend preschool programs other than Head Start.

Age at time of testing: A description of the age of the children at the time they were tested is complicated by the fact that some children were tested over a several-month period. This happened because children who

Table 2-22

Percentage of Father's Occupation Group Classified by Site, Race, and Children's Preschool Attendance

	White				Black			
	HS	O	PS	Total	HS	O	PS	Total
Portland								
White-Collar	12.9	74.3	12.9	70	30.4	52.2	17.4	46
Blue-Collar	15.4	82.1	2.6	78	44.2	46.0	9.8	163
Unemployed	40.0	40.0	20.0	5	42.9	47.6	9.5	21
TOTAL	15.0	77.1	7.8	153	41.3	47.4	11.3	230
St. Louis								
White-Collar	0	100.0	0	6	63.6	36.4	0	11
Blue-Collar	19.1	80.9	0	68	25.6	73.2	1.2	82
Unemployed	20.0	60.0	20.0	5	33.3	61.1	5.6	18
TOTAL	17.7	81.0	1.3	79	30.6	67.6	1.8	111
Trenton								
White-Collar	3.6	96.4	0	28	27.3	54.5	18.2	11
Blue-Collar	4.5	90.9	4.5	44	32.8	58.2	9.0	134
Unemployed	0	0	0	0	20.0	80.0	0	15
TOTAL	4.2	93.1	2.8	72	31.3	60.0	8.8	160
Three Sites Combined								
White-Collar	9.6	81.7	8.7	104	35.3	50.0	14.7	68
Blue-Collar	14.2	83.7	2.1	190	36.1	56.2	7.7	379
Unemployed	30.0	50.0	20.0	10	33.3	61.1	5.6	54
TOTAL	13.2	81.9	4.9	304	35.7	55.9	8.4	501

missed some of the week of testing were followed up and brought back whenever possible to the testing center for further testing. In the ordinary routine, children were given a common battery of instruments on their first day and then took three batteries during the rest of the week. For simplicity, we have selected at random one test from each battery and computed the mean age of the children at the time of testing, classified by preschool attendance. These data, separated by site, are shown in Table 2-23.

The table contains two entries in each cell: the number of children in that cell and their average age in months. One pattern shows up quite strongly: the children in St. Louis were on the average two-and-a-half months older when they were tested than were the children in other sites. As discussed in the next chapter, it was necessary to begin testing later and also to extend testing by about three months in St. Louis in order to increase the sample size in that site. We note that these children are still of the appropriate age, but the age at the preliminary testing was two-and-a-half months older.

There is also a very slight tendency for children enrolled in some preschool program (Head Start or other) to be slightly older than those in the no-known-preschool category.

Table 2-23

Average Age at Time of Testing, Classified by Site and Child's Preschool Attendance

Day 1 Battery: Motor Inhibition Test

	Head Start		Other		Other Preschool		Total	
	N	Mean	N	Mean	N	Mean	N	Mean
Portland	195	51.07	245	50.69	45	50.69	485	50.84
St. Louis	98	53.13	122	52.95	1	57.00	221	53.05
Trenton	105	51.34	210	50.10	28	51.71	343	50.62
TOTAL	398	51.64	577	50.95	74	51.16	1049	51.23

Battery A: Preschool Inventory (Caldwell)

	Head Start		Other		Other Preschool		Total	
	N	Mean	N	Mean	N	Mean	N	Mean
Portland	194	51.17	244	50.68	47	50.77	485	50.89
St. Louis	98	53.13	116	53.13	1	57.00	215	53.15
Trenton	104	51.28	205	50.02	28	51.71	337	50.55
TOTAL	396	51.68	565	50.95	76	51.20	1037	51.25

Battery B: ETS Story Sequence

	Head Start		Other		Other Preschool		Total	
	N	Mean	N	Mean	N	Mean	N	Mean
Portland	195	51.18	245	50.67	46	50.72	486	50.88
St. Louis	93	53.27	116	53.11	1	57.00	210	53.20
Trenton	104	51.39	199	50.08	28	51.71	331	50.63
TOTAL	392	51.73	560	50.97	75	51.17	1027	51.27

Battery C: Boy-Girl Identity Task

	Head Start		Other		Other Preschool		Total	
	N	Mean	N	Mean	N	Mean	N	Mean
Portland	174	51.47	2[illegible]5	50.85	43	50.86	432	51.10
St. Louis	90	53.32	113	53.13	1	57.00	204	53.24
Trenton	104	51.54	205	50.11	27	51.59	336	50.67
TOTAL	368	51.94	533	51.04	71	51.22	972	51.39

CHAPTER 3--METHODOLOGY

Collection of Data*

Enumeration and Parent Interviews

The first phase of data collection, enumeration, and parent interviews, was undertaken by Audits and Surveys of New York, N. Y. Its task was to locate all eligible households within the geographic areas being studied, based on a definition of eligibility supplied by ETS, and then to complete a 90-minute interview with the mother or mother surrogate of that household. An eligible child was defined by birthdate, in terms of eligibility to enter first grade in Fall, 1971. Admissable birthdates differed slightly from area to area, paralleling differences in first grade admission qualifications.

Previous experience with similar surveys had demonstrated that a key issue is community support. Attempts were made to secure community support through the use of local media and through contact with key community leaders, such as local pastors, elected officials, social club members, civil rights leaders, and Head Start and Vista workers.

Interviewers were recruited from the local community, and supervision was maintained through a local field office which was monitored by A & S home staff. Interviewers were trained by A & S staff, both locally and in New York. A "trial run" was undertaken in each site as part of the training procedure.

Following initial piloting in the metropolitan New York area, a full-scale pilot test consisting of about 10 completed interviews was conducted in each of the four study sites. The interviewing procedures paralleled the

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*See ETS, PR-69-12, "From Theory to Operations," for a more detailed accounting of Year 1 data-collection procedures.

final design and execution to as great an extent as possible. Audits and Surveys' project director traveled to three sites for the pilot test, and ETS staff administered the interview in the fourth site (Trenton). Three interviewers in each city underwent an extensive briefing in order to conduct the pilot test.

Reactions of the interviewers to various parts of the briefing were useful in evaluating the training methods to be used for the main part of the survey. Once the briefing was completed, each interviewer was given an assignment to complete and was instructed to return to the training center for debriefing. The debriefing took place at a meeting with all three interviewers present. On a question-by-question basis, each interviewer was asked about her reactions to the question, about her opinion of each respondent's reaction, and about the types of answers she obtained. The comments of one interviewer frequently served as a springboard for another interviewer to comment on some related experience she had had with that same question. The entire debriefing was taped for further analysis by executives of Audits and Surveys and Educational Testing Service. The debriefing report by the project director, supported by the tape recordings and independent analysis of the pilot-test questionnaires, were quite useful in the final revision of the questionnaire and the training procedures.

Since changes in the interview involved only deletion of a few ambiguous and/or alternatively-worded questions, or modifications in format rather than in the nature of an item, a previously scheduled second pilot test was considered unnecessary. A sample copy of the Parent Interview will be found in Appendix B.

Once interviewer training was completed, the interviewing of eligible mothers or mother substitutes began. The administration of these interviews went relatively smoothly, and each one was reviewed on a question-by-question basis. Answers were checked for consistency, clarity, and completeness. If any answer was insufficient, for whatever reason, a decision was made as to whether the question was "factual" or "situational." Where the question was factual (that is, the answers were not thought to vary over a short period of time), the respondent was approached to obtain clarification. If the question was more susceptible to situational determinants (that is, answers to it could vary over a short period of time), the respondent was not consulted.

Regardless of how generally satisfactory an interviewer's work seemed, the supervisor (unknown to the interviewer) consulted at least 15% of every interviewer's respondents, either by telephone or by a visit to the home. Since the program was to be conducted over several years, it was important not to antagonize any respondents during this validation phase. Therefore, consultations were explained as a request for additional clarification, rather than as a check on whether the interview had actually been conducted. The respondent was told that the questionnaire was not clear at this point and was asked if she could help to clarify "the record."

A series of problems was encountered during the enumeration phase. An immediate problem concerned the development of individual location maps to control interviewer assignments. This was particularly difficult in rural areas of Lee County, because frequently there were no named streets or official county roads. Usually, available landmarks are used when preparing location maps for rural areas, but this was not possible in Lee County because there was no up-to-date official map of the county on which such landmarks could be identified. The most recent county map had been prepared in the late 1930's, with some irregular and scattered updating in 1948.

The problem was severe. Without a detailed map it would be difficult to control interviewer assignments. Audits and Surveys therefore turned to the County Tax Assessor, only to find that even he had no detailed map of the county, but was using maps inherited from several decades earlier.

The problem was resolved by hiring several local residents who had lived in the area for many years. These persons traveled through the county making detailed maps of each school district. This appeared to be an effective solution, and their maps were used to prepare the needed location maps.

Other steps taken in Lee County to locate potential subjects included these:

a. Local grocers throughout Smith's Station were interviewed. Many were able to provide help in finding residents.

b. The U. S. Post Office in Smith's Station was approached and the local postmaster interviewed.

c. Audits and Surveys' local area supervisor met with officials of the Alabama Power Company, who assisted in locating additional households.

Even then, the problem of locating all families residing in Smith's Station was not completely resolved. Again, several area residents with detailed knowledge of the district were able to locate some households that had been missed.

The problem of locating the expected number of households was not unique to the rural areas of Lee County. In St. Louis, for example, it was found that many of the neighborhoods being studied have houses with entrances in alleyways which do not appear on official maps. Here, too, the solution was based mainly on the use of local residents.

A question about first-grade enrollment was used as a cross-check to ensure that as few eligible households as possible were missed during prelisting. However, unexpected variations in local enrollment practices caused problems. For example:

a. In several school districts, students who live outside the districts are admitted.

b. In St. Louis, the identification system proved confusing. School authorities assign each child a combination alpha-numeric code which refers to the child's level of academic proficiency rather than to the number of years he has been attending school.

c. Certain schools are thought to be "better" than others, and some parents falsify their addresses in order to enroll their children in these schools.

d. A few children are enrolled in the first grade who were born before December 1, 1961; they therefore were over 7 years of age at the time of the interview. Although this is relatively rare on a national level, within the specific populations being studied there is a greater likelihood of encountering the situation. As a result, the number of first-graders found in the prelisting is likely to be lower than the number actually enrolled.

Other problems included the fear and distrust many ghetto residents displayed towards being interviewed--coupled with a hostility and boredom engendered by their having been over-interviewed in the recent past; the difficulty in obtaining accurate birthdates to determine eligibility (multiple interviews often resulted in multiple birthdates); local emergency situations such as rent strikes; and the chronic upheavals which generally characterize life in disadvantaged areas.

Individual Testing

Phase two of the data collection process involved administration of the individual test measures designed for the study. From the beginning of the study it had been argued that using local testers would facilitate community cooperation, increase the validity of the data obtained, and provide training which would contribute to future employment possibilities for community residents.

The general procedures in the field were the same in each site. Prior to the arrival of the ETS training team, the local coordinator preselected the tester trainees, choosing approximately 30% more than the number who would eventually be hired. Depending on a variety of factors (such as the resources in the community, the local coordinator's preferences, publicity concerning the project, and intra-community relations), trainees varied both within and between sites. As specified, all trainees were female. The usual educational credentials were not required, but experience in working with young children was considered highly desirable, as was the ability to read and speak with ease. Our judgments as to the adequacy of the tester's affective reactions to children and her ability to learn the tasks were the two focal criteria. Most of the trainees were housewives who had had limited work experience, and most were black. Since staff resources did not allow us to begin training simultaneously in all four sites, training was undertaken at two-week intervals, starting March 17 in Auburn (March 31 in Portland, April 14 in Trenton, and April 28 in St. Louis).

During the first two weeks, training took place in the local coordinator's office. After receiving a general orientation to the project and to testing young children, trainees began on the very first day to practice one of the simpler tasks. It was felt that modes for handling the variety of problems a tester was likely to encounter were best discussed in the context of a particular test. These general procedures were then repeated more meaningfully in the context of other tasks. As in training trainers, the task was first demonstrated, and then the trainees practiced by administering it to each other.

The first tasks demonstrated were those in the Day 1 battery since all testers were required to administer that sequence. To reduce the number of tasks that she would be required to learn, we then assigned each trainee to learn one of the three remaining batteries. As in previous situations, each task was demonstrated, and trainees then practiced administering each of the tasks to each other and to children volunteered by other trainees, their friends, and neighbors. Additional teaching methods,adopted in Trenton and St. Louis, were the use of videotapes of the trainees administering tests, and of brief tests to assess the trainee's knowledge of the test in the battery.

During the third week, trainees moved to the actual testing centers. A trainer was assigned to each center to ensure the adequacy of the physical arrangements, to arrange for the necessary testing supplies, and to function as a center supervisor so that trainees could concentrate on improving their testing skills. The local coordinator arranged for practice subjects who would be comparable to sample subjects. The fourth (and sometimes fifth) week of testing practice subjects was observed by ETS evaluators (Mr. Ward and Mrs. Shipman) to select those trainees best prepared to be center supervisor, tester, or play-area supervisor. Following the evaluation, each trainee not selected was seen individually. Every attempt was made to structure the situation as a growth experience instead of a failure and to maintain the person's interest and involvement in the study. Once evaluations were completed, each center operated one or two weeks more for a dry run. A Princeton Office trainer continued to be assigned to each center to provide general assistance and additional instruction in testing while the center staff practiced their new roles. Monitoring of center operations was assumed by ETS regional office staff with the assistance of Princeton Office staff once the actual testing began.

As in training interviewers, piloting of procedures was an essential part of the training process. Prior to initial selection, each measure had been administered to children similar in age and socioeconomic level. None, however, had been given by indigenous testers under the supervision of an ETS researcher; typically, a research assistant or graduate student administered the tasks. Although considerable rewriting of test manuals and changes in test format to facilitate handling of the testing materials had taken place both before and during the training of tester-trainers, refinement of procedures awaited piloting in the field. The first two sites (Auburn, Alabama; and Portland, Oregon) were, therefore, used for continued simplification and clarification of testing and scoring procedures based on trainer experiences and trainee suggestions.

Similarly, the pilot batteries for the four days had been arranged to take into consideration the need to balance type of response (active vs. passive, verbal vs. nonverbal), to maintain constancy of certain sequencing (e.g., Johns Hopkins Perceptual Test before Matching Familiar Figures, since the former involves practice on the response demanded), to offer a variety of stimuli, and to provide something to take home (a picture, bag of toys, coloring book, Tootsie Roll). Nonetheless, the batteries still had to be representative of the various domains. The first week of dry-run cases in each site piloted the adequacy of the sequencing. After experiences in the first two sites, we made minor adjustments to permit more equivalent testing time and level of difficulty of test administration across batteries. Trainees and trainers were encouraged to discuss the merits of the various modifications, and not until testers were ready to test actual sample children were procedures stabilized for final production of manuals. From such cooperative efforts, of course, are derived not only more adequate measurement procedures, but the type of community-based research which this study stands for. (Table 3-1 shows the final order of the tests in the batteries.)

Testing centers were located in churches or community recreation facilities in or near the districts where the children lived. Each center provided, at a minimum, six individual testing rooms (or spaces which were partitioned off from larger areas) and a larger play and rest area; most also included some kitchen facilities. Each testing unit was staffed by nine persons--a center supervisor, a play area supervisor, a driver, and six testers. Each center operated five days a week, with each child being scheduled for a four-day testing sequence, usually of $1\frac{1}{2}$ hour duration, and the fifth day scheduled for makeups. A rigid schedule was not always possible, however, and the centers also operated in the early evenings and on Saturdays for the convenience of working mothers. There was great flexibility in individual testing also. Testers were instructed to wait until the children were ready, and breaks were taken whenever necessary. If necessary, staffs were transferred to new locations to accommodate the children in other sample school districts within a community.

The first longitudinal sample children were tested seven to eight weeks after the beginning of tester training. During the actual testing, the center staffs worked independently except for periodic visits by a monitoring staff. The monitors were responsible for providing general advice, on both testing and administrative problems, to the center staff and to the local coordinator, and for observations to determine whether standard testing procedures were being followed.

Table 3-1

The Measures and Testing Sequence Used in the Initial Assessments

Day 1

First-Day-of-School Question
Mother-Child Interaction Tasks:

Hess & Shipman Toy Sorting Task
Hess & Shipman Eight-Block Sorting Task
Hess & Shipman Etch-a-Sketch Interaction Task

Motor Inhibition Test
ETS Matched Pictures Language Comprehension Task I

Battery A	Time in minutes
Preschool Inventory (Caldwell)	20
Vigor I	5
Spontaneous Numerical Correspondence	5
Massad Mimicry Test I	10
TAMA General Knowledge I	10
Risk Taking 1 and 2	20
Picture Completion (WPSSI)	5
Battery B	
Sigel Object Categorizing Test	20
Mischel Technique	5
Johns Hopkins Perceptual Test	15
Open Field Test	10
ETS Story Sequence Task, Part I	15
Seguin Form Board Test	5
Matching Familiar Figures Test	15
Battery C	
Fixation Time	20
Vigor 2	5
Brown IDS Self-Concept Referents Test	10
Preschool Embedded Figures Test	15
Children's Auditory Discrimination Inventory	10
Peabody Picture Vocabulary Test, Form A	15
Boy-Girl Identity Task	5
ETS Enumeration I	5

Centers had to continue testing throughout the summer in an attempt to test the desired number of children, despite initial predictions that all testing would be completed about July 1. Although most centers were capable of testing 24 children per week, they worked with many fewer than these. There were many reasons for the absences, including in some cases a failure to obtain, at an adequate rate, the names of eligible families interviewed; also in several sites there was some reluctance of parents to allow their children to participate. Increased project publicity and personal visits by the local coordinator and testing staff helped to combat the latter problem. An additional impediment was a greater turnover in testing staff than had been anticipated. Among the many reasons for this turnover were the following: the job of tester is a temporary one, so some of the most capable testers resigned for longer-term employment; some had made other summer commitments or had to remain home with children; various private emergencies were responsible for some additional loss of personnel. It was a hard fact of life for our testers that many lacked resources; consequently, emergencies arose more frequently and were more incapacitating than might otherwise have been the case. Because of the turnover, training activities were resumed in mid-June and continued, as required, through August. Training time was shortened, however, for both trainee and trainer since the trainee could obtain more individual attention, and the trainer could share training duties with regional office and local center staff and did not have to manage center functioning as well. As with the original trainees, however, evaluations were made in the same way by the Princeton Office trainers.

Because we were behind schedule at the end of August, particularly in St. Louis and Trenton, and because the goal was to test all children who would attend Head Start before they were actually exposed to the Head Start program, we did the following:

1. We secured Head Start advance registration lists for all centers within the districts of the study. These lists were checked against the names of children already tested, and the remainder were scheduled for testing as quickly as possible. When necessary, children were tested first and their mothers interviewed later.

2. At the opening of Head Start, each Head Start teacher (through the center director) was provided with a list of all children who had been tested in the district. She was to send any untested children directly to the nearest testing center before they participated in the Head Start program. Of course, appropriate provisions were made for securing parental permission and for transporting children. Assistance from the national Head Start Research Office was very important for this phase.

3. The testing of any "left over" non-Head Start children was completed in September after the last Head Start children had been tested.

We should stress again that these extraordinary efforts were mainly relevant to Trenton and St. Louis, though we also extended testing time in Portland and Lee County to obtain as complete a sample there as possible.

Medical Histories and Examinations

The third phase of data collection involved medical histories and examinations. As is true for some other aspects of the study, there were regional variations in the procedures for conducting the medical examination. In St. Louis, a Neighborhood Health Center was contracted to do the examinations. In Portland and Trenton, a single physician examined all the study children. Distances in Lee County made it impossible to concentrate the medical examinations in one location, so three physicians covered the children in their respective areas. Examinations were scheduled routinely following completion of the testing cycle. As was true during the testing period, some families required many reappointments. A description of the examination and a sample Health Record will be found in Appendix B.

Processing of Data

The computer systems application for this report consists of two distinct but interrelated parts: (1) the construction and maintenance of the data base, and (2) the design, programming, and execution of the analysis for each instrument included in the report. An important property of the system is its ability to retrieve data at any stage in the construction or maintenance of the data base. This feature allows for parallel testing and execution of preliminary analysis for any instrument as soon as the data are entered into the system. Thus, the two phases are distinct but can be accomplished concurrently.

Design of the Data Base

Since each instrument represents, to a degree, a separate logical entity, we decided to use a form of file organization that would allow the data for all instruments to be stored in and accessed from a single comprehensive data file. The file was organized to allow direct access to any instrument or instruments. The data-base organization selected is known in IBM literature as "partitioned data set organization on direct access devices." This method of file organization is most applicable when separate sequential data files are needed; access to one or more of these files at a given time can be easily accomplished without one's having to keep track of numerous data files.

A partitioned data set (file) consists of several sequential units or members (in this case the individual instruments and a master file) and a directory containing the name and beginning address of each member. Any member(s) may be selected for retrieval by referring to the partitioned data set by name and making a secondary referral to the member(s) name. Members may be added or deleted as required. The records within a member are organized sequentially and are retrieved or stored successively according to physical sequence. In addition, through the use of maintenance programs, individual records of a selected member can be added, changed, or deleted as the need arises.

Figure 3-1 shows the flow of data as they entered the system. After an initial screening of answer sheets for administration and recording errors, the data were coded onto keypunchable forms and verified. This double coding of data was a very time-consuming and laborious chore, but necessary to insure accuracy. The data were then punched, verified, and edited. The editing was accomplished by a computer program and included tests for I.D. conflicts, digit errors, sequence errors, and range errors on variables. A list of the rejected data was printed and returned to the coders for resolution and resubmission to the edit program. Upon completion of the above phase the data were considered "clean" and placed onto disc by the data bank maintenance programs.

The data set maintenance programs to add, replace, or delete individual records for any selected member are written in FORTRAN. When a member is updated on a disc pack, the old member is still available until replaced with the new version by adjusting the pointer in the partitioned data set directory. This adjustment of the pointer is not made until it has been determined that the update was a complete success. The entire partitioned data set including all members and the directory is "unloaded" to tape weekly. Thus a recovery from any major disc problem would only require "loading" the tape version onto a new disc pack and repeating any updates made since the tape was created.

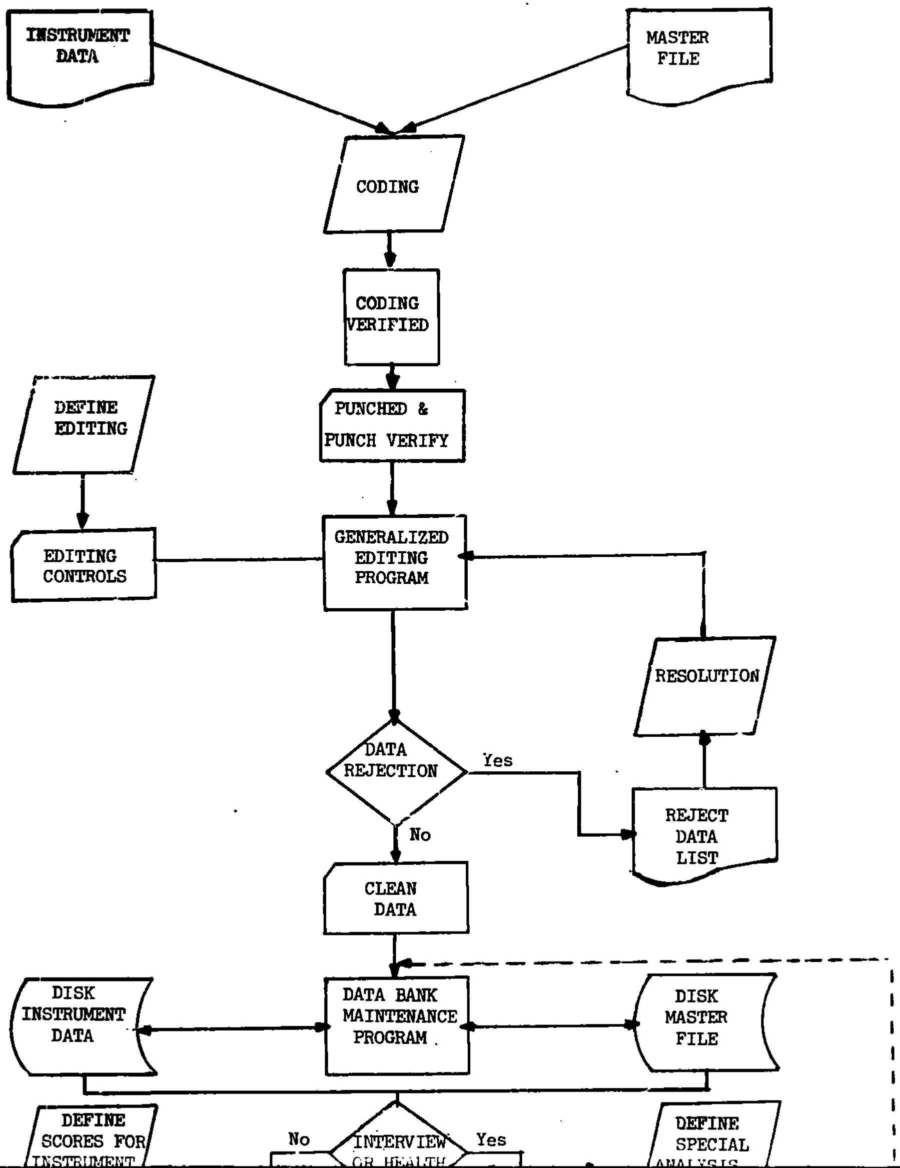
To coordinate the system and supply the necessary information for the statistical comparison, a "master" file was created and stored on a disc under "password" protection. This prevents any entry to the file unless the proper "password" is supplied by an authorized user. This protection was a necessary precaution since the file contains data from the parent questionnaire; the test scores and school records; and the child's identification number, sex, race, preschool experience, and birthdate.

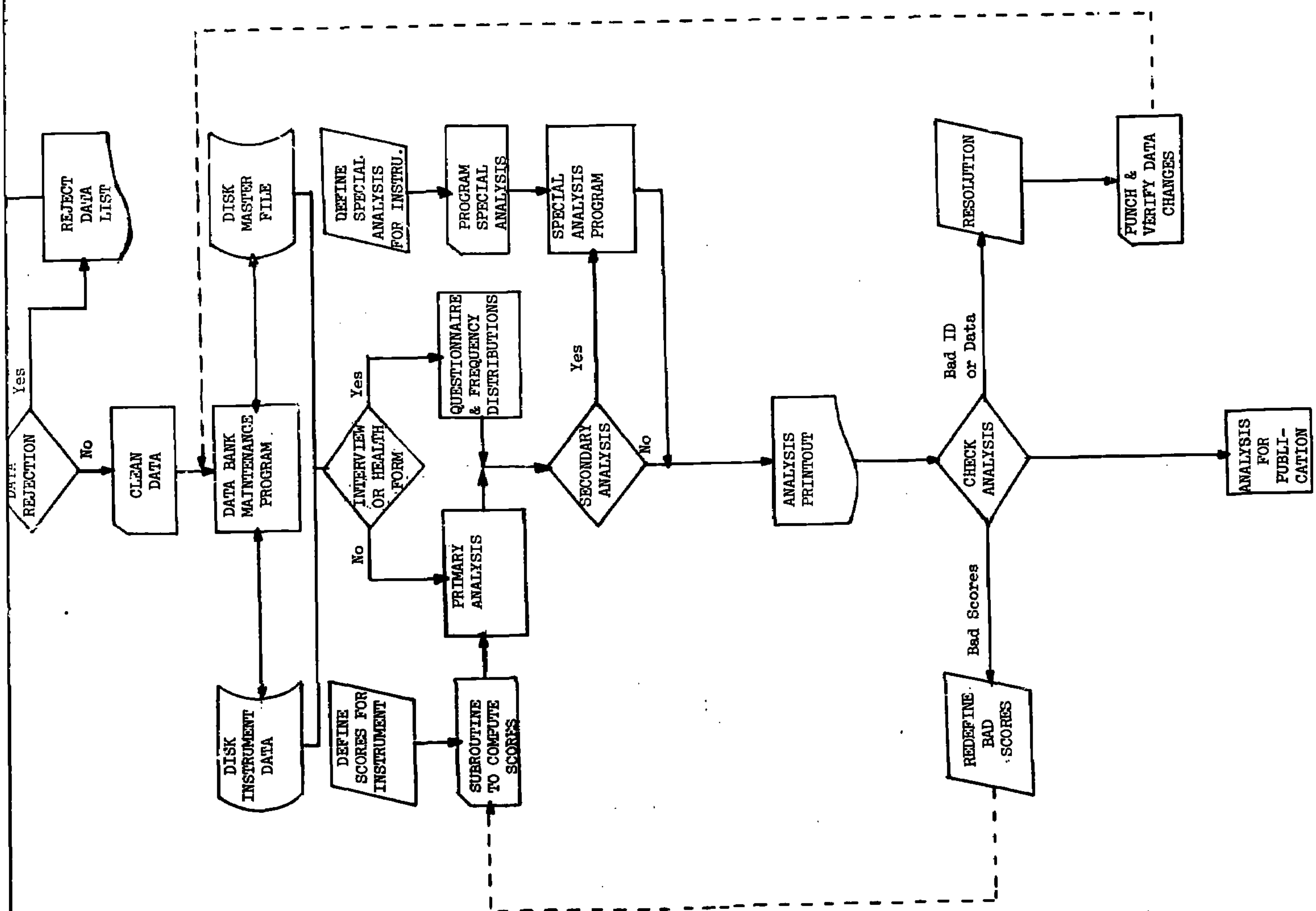
Data Analysis

The primary analysis program written for this report computes and prints for each site (Trenton, St. Louis, Portland) and for the three sites combined two factorially constructed tables containing descriptive statistics on the derived scores of each instrument. The first statistical table presents data by age at time of testing, by sex and by race, with age subdivided into six three-month intervals starting with 42-44 months and ending at 57-59 months. Race is divided into two categories, black and white. (The races classified under "Other" in the sample were excluded from these analyses because of a paucity of data.) The second table presents data by preschool experience, by sex and by race. Preschool experience was divided into three categories: Head Start, no known preschool, and other preschool experience. The tables are completely cross-classified with a Total row computed by collapsing all the cells into it. For each cell the information includes the number of observations, mean, standard deviation, minimum score, maximum score, and a percent response for each possible score category. The percent response is replaced, in the case of continuous scores, by the tenth, twenty-fifth, fiftieth, seventy-fifth, and ninetieth percentiles. The percent-response option has a cell count separate from the count used for the mean. This occurs because the percentage

FIGURE 3-1

Data Flow and Analysis System




DATA REJECTION
Yes
No
REJECT DATA LIST
CLEAN DATA
DISK MASTER FILE
DATA BANK MAINTENANCE PROGRAM
DISK INSTRUMENT DATA
DEFINE SPECIAL ANALYSIS FOR INSTRU.
PROGRAM SPECIAL ANALYSIS
SPECIAL ANALYSIS PROGRAM
INTERVIEW OR HEALTH FORM
Yes
No
QUESTIONNAIRE & FREQUENCY DISTRIBUTIONS
PRIMARY ANALYSIS
DEFINE SCORES FOR INSTRUMENT
SUBROUTINE TO COMPUTE SCORES
SECONDARY ANALYSIS
Yes
No
ANALYSIS PRINTOUT
CHECK ANALYSIS
Bad ID or Data
Bad Scores
RESOLUTION
PUNCH & VERIFY DATA CHANGES
REDEFINE BAD SCORES
ANALYSIS FOR PUBLI- CATION

of tester errors and the percentage of refusals are computed and printed in the percent-response part of the table, but these cases are excluded from the cell mean. When percentiles are used, the separate cell size is not printed since only the scores used in computing the mean were used to compute the percentiles. Tester errors and refusals are excluded from the percentiles as well as from the mean. When the percentile option is used and the number of observations in the cell is less than six, the printed output consists of asterisks. This is done to preclude any confusion which might cause misinterpretation of the percentiles.

"Among" and "within" statistics provided at the bottom of each table enable researchers to perform "a posteriori" tests on the data using methods such as Scheffé's (see Appendix C). The square of the statistic printed under the standard deviation column in the "among" row is the mean square associated with all the nonzero cells in the table. The squared "within" statistic is the estimate of the within-cell variance computed by pooling the variances within all the nonzero cells.

Race, sex, age at time of testing, and preschool experience marginal cells were also provided by the primary analysis program. These were not included in the published report, however, because the direct interpretation of these marginals should be avoided until the confounding of these and other variables is resolved. Later detailed analyses will take these confoundings into account.

The statistics for the Child Health Record and Parent Interview are presented somewhat differently from those of the other instruments. Here questionnaire distributions were run, consisting of counts and percent responding for each response of every item. This information was provided across all sites and within each site, by sex, by race, and by preschool experience. A Chi-square statistic was provided for all items when the questionnaire had several categories (such as male, female). The Chi-square computation does not include the "No Response" category provided on every item. If a predicted cell size was smaller than five, the Chi-square statistic was flagged with the letters (NV) indicating that the statistic may not be valid. Items considered to be of a continuous nature were excluded from the questionnaire distributions, and separate frequency distributions were provided for each of these items using the same site, sex, race, and preschool categories output for the questionnaire items. The frequency distribution output also provides other useful information, such as the mean, standard deviation, minimum value, maximum value, sum of scores, sum of squared scores, percent below intervals, and an analysis of variance table for comparison of the categories involved.

Labeling of the tables was considered a very important part of the computer output. A great deal of time and work went into composing, keypunching, checking and rechecking the labels. Each label contains as much information about a score as was possible to fit into the limited space available on the computer form. The great care taken to provide these labels was worth the time and effort. It has made the tables directly readable and will protect against the possibility of using the wrong table for any given score.

In all the file maintenance and analysis runs, a child's test data had to be matched to his master-file data. The master-file data provided the necessary identification checks and information on the age at time of testing (which had to be computed for each instrument since the date of testing varied for the instruments), sex, race, site, and preschool experience. A subprogram used by the maintenance routines and the analysis routine performed this function. The ability of both the maintenance and the analysis programs to use this common subprogram not only saved programming and testing time, it also insured that the data used, at all stages of the analysis, were "clean" data.

It was stated earlier that each instrument was essentially an independent set of data. This was a major obstacle in the design of a generalized primary analysis program that could be used for all the instruments (excluding the questionnaire type of instrument), since every instrument had a different decoding scheme. A further complication was that many scores had to be computed by some logical sequence involving many pieces of information in the child's record. It was decided to use a method developed at Educational Testing Service, involving the programming of a unique decoding subprogram for each instrument. Its function was to decode the child's record and create derived scores for the instrument. In this way a generalized analysis program could be designed and tables for any instrument could be computed by providing the correct input control cards, label cards, and decoding subprogram. A time-saving feature of this method was that the programming and testing of the primary analysis program could be accomplished while the decoding subprograms were being independently assembled and tested. This method of decoding the instruments has proven to be successful in this study, as it has been in earlier studies of this type.

As shown in Figure 3-1, special or secondary analyses have been run on many of the instruments involved in this report. For all the scores that were derived from right-wrong type of items, tables of item difficulty, biserial correlations of the items with the score, and KR-21 reliability coefficients were computed and printed. Where time permitted, Pearson product-moment correlation coefficients among scores of a given instrument were computed and a few special requests for analysis that were urgently needed to interpret the other results were also provided.

In the analysis program--as well as in the file maintenance program--label checks, data checks, variable checks, program checks, and input control-card checks were all carefully planned to prevent any possibility of incorrect use of any data, labels, or programs in a given computer run.

CHAPTER 4--RESULTS

In Chapter 4 we have sought to depict, on a simple descriptive level, the children's cognitive, affective, perceptual, and physical characteristics as they appeared initially in the study. These are set against a background of information obtained from their mothers. Although the measures discussed in this chapter are only a selection from the totality of measures administered in Year 1, those we have chosen for report are typical of the several domains we have included for investigation.

Thus, Section A reports the results of the Parent Interview, providing, in addition to demographic information, data on mothers' attitudes toward school and community, their use and knowledge of community resources, their perceptions of their children's behavior, their achievement orientation, and their use of home resources.

Section B presents the data obtained from the Children's Health Record: the children's medical history and description of their present physical status.

Section C presents data representative of the cognitive domain, concerning itself both with school-related <u>skills</u> and <u>styles</u> of cognition. Ten measures are discussed.

Section D samples the personal and social domain--seeking to picture the child's image of himself and his functioning in a relatively unstructured situation.

Section E discusses the results on four measures. Two of these explore the children's physical vigor and two their perceptual abilities.

In chapter 2 we directed attention to the disproportionalities and confounding of the status classifications used in this report, pointing out the limitations this situation imposed on interpretation of findings reported in this chapter. We have here performed only the first in a projected series of data analyses. Consequently, the findings reported must be read with caution and any interpretations presented be regarded as highly tentative.

Section A

Parent Interview

Background

The relationship between family variables and children's development in the social, emotional, and cognitive domains is well documented by empirical evidence. Until very recently, the focus of such research has been upon those aspects of child-rearing that are related to personality development and social adjustment (Kagan & Moss, 1961; Peck & Richek, 1964; and Sears, Maccoby, & Levin, 1957). More germane to the present study is the question of what variables are most critically related to emerging intellectual characteristics and styles influencing the child's functioning in school.

In measuring aspects of the environment that correlate with the growth of intelligence and academic achievement, Wolf (1964) and Dave (1963) distinguish between status and process variables. Simply stated, this is the distinction between what parents are (e.g., ethnic membership, occupational-educational level) and what they do (e.g., styles of interaction with the child and aspirations held for him). The usual measures of socioeconomic level constitute a cluster of status characteristics, and these typically correlate about .40 to .50 with measures of intelligence and achievement in heterogeneous populations (Bloom, 1964). In the Wolf and Dave studies, summarized by Bloom (1964), much higher correlations were obtained between process variables and measures of intelligence and achievement (.76 and .80, respectively). Although not all investigations have yielded such high coefficients, other studies have clearly confirmed the existence of consistent and significant relationships between family process variables and cognitive characteristics of the child--even in populations that are homogeneous with respect to socioeconomic level (Dyk & Witkin, 1965; Freeberg & Payne, 1967; Hess et al., 1969; Hess & Shipman, 1968a; Solomon, Parelius, & Busse, 1967).

Demonstrated correlational significance is not the only factor to consider in deciding upon the variables to be investigated. Theoretical utility is also important. Although certain status-related variables (e.g., those concerned with the child's physical surroundings) provide an opportunity for theoretical formulation of how the environment mediates experience in critical ways, it is primarily the process variables which are important in this respect (Baldwin, 1967; Bernstein, 1961; Cazden, 1966; Deutsch, 1963; Hess & Shipman, 1965, 1968; Hunt, 1961). For reasons of both empirical <u>and</u> theoretical significance, therefore, greater priority is being given to process variables in this study. Information about situational and status characteristics are obtained only insofar as these either (a) define important aspects of the child's psychological as well as physical environment, or (b) identify subpopulations which should be analyzed separately.

In order to obtain information on the family that is most relevant to this set of conceptualizations, the following categories of process variables were included in the study:

1. <u>Feelings of control over the environment</u>: Broadly speaking, this variable concerns the degree to which a person feels he can shape and direct his own future and the events which affect him. At one extreme, it is the conviction that one's actions make the decisive difference in life--and, conversely, that consequences are not the result of one's own behavior and are not under one's own control. These beliefs have generally been referred to in the literature as internal vs. external <u>locus of control</u> or sense of powerfulness vs. powerlessness.

The behavioral correlates of such beliefs are several. As summarized by Rotter (1966): "A series of studies provides strong support for the hypotheses that the individual who has a strong belief that he can control his own destiny is likely to (a) be more alert to those aspects of the environment which provide useful information for his future behavior; (b) take steps to improve his environmental condition; (c) place greater value on skill or achievement reinforcements and be generally more concerned with his ability, particularly his failures; and (d) be resistive to subtle attempts to influence him." (p. 25)

Since our study sample is composed of predominantly low-income families, many -- especially those of minority status -- objectively restricted by environmental conditions in making decisions about how they will live and function, it is expected that a greater proportion will show external orientations than middle class populations would. Variation within our sample, however, is also expected, and there may be differential effects, depending upon the pervasiveness of the belief. In the Year 1 interview, questions were included assessing feelings of powerlessness with respect to the school and local community conditions. This variable is also tapped by items regarding the mother's perceived responsibility for her child's behavior and future success. Related to this factor is the mother's participation and involvement in activities with the child. Of special interest to the project are those activities which are school supportive (e.g., reading to the child and, later, helping with homework). The assumption is that such activities reflect the mother's feelings of competency and ability to effect changes in the child.

The discrepancy between aspirations and actual expectancies is conceived here as an indirect measure of the parent's feeling of influence in the child's life. Although it has been found that mothers of varying socioeconomic level differ little in expressed aspirations for their child's schooling--valuing education as an important tool for achieving better status in life--discrepancies between aspirations and expectations tend to increase as social status decreases (Gervasi, 1969; Hess & Shipman, 1968b).

This study will provide an opportunity to investigate the mother's feeling of control over reinforcements not only in relation to similar feelings of her child, but also in relation to the community in which she resides. For example, as a ghetto becomes more organized, vocal, and effective in doing something about its problems, to what extent does the individual within that ghetto develop increasing expectancies of control over what happens to him? Similarly, where Head Start has provided the mother an active role in determining policies in the program, one would hypothesize increased feelings of efficacy in dealing with other situations.

2. Attitude toward and utilization of community resources (participation versus alienation): Closely related to the concept of internal versus external control is the sociological notion of alienation. Although it is possible to distinguish several meanings of the term (e.g., see Rotter, Seeman, & Liverant, 1962), "alienation" is used here to mean a sense of futility, apathy, and general distrust with respect to social participation. It seems reasonable to hypothesize that such alienation would arrest development and lead to inconsistency of child-rearing practices. At the very least, a mother's alienation from the community would serve to reduce her child's potential opportunities for cognitive stimulation. Support for this hypothesis comes from a study by Slaughter (1968) in which she found degree of social isolation of the mother to be a significant correlate of the child's level of school achievement. "Social isolation" was defined by Slaughter in terms of the mother's utilization of available community resources. Similarly, Hess et al. (1968) found, both for their total sample and for their lower-class subjects alone, that the mother's degree of participation in organizations was significantly related to her four-year-old child's cognitive performance.

Accordingly, several questions were included pertaining to the mother's participation in community life. It was expected that those mothers who are less alienated would be more likely to send their child to Head Start--if for no other reason than that they are more likely to have heard about it (Chandler et al., 1966).

3. Control techniques: Three types of family or maternal techniques for regulating and controlling the child have been identified and extensively investigated in the work of Hess and Shipman (1965, 1968a). These strategies differ primarily in the type of authority appeals made to the child. Status-normative control is characterized by demands for unquestioning obedience to an absolute authority--either the parents' by virtue of their status, or societal norms by virtue of tradition. The effect of this strategy is to discourage questioning and, indeed, to cut off thought and search for a rationale. The child is asked to attend to an uncomplicated message and to make a conditioned response (to comply); he is not called upon to reflect or to make mental discriminations. Moreover, the child learns to attend to authority figures as enforcers of rules. In the family, as in other social structures, control is exercised in part through status appeals. The feature that distinguishes among families is the extent to which status-based control maneuvers are modified by orientation toward inner states and/or logical consequences. Internal-subjective control strategies take the child's feelings into account and these serve to moderate demands made on him. In turn, appeal is made to the feelings of other people as a rationale for behavior codes. Attention is directed toward inner states (to feelings, moods, and personal preferences) rather than to rules, and this encourages a more specific and complex mode of communication. Subjective controls encourage the child to take the role of another and to see his own behavior from a different perspective. Cognitive-rational*

*A better label is required since both internal-subjective and cognitive-rational appeals have cognitive components.

appeals, on the other hand, stress objective informational feedback and direct the child's attention to the logical consequences of behavior rather than to feelings and established rules. They call for a more complex response on the part of the child, for he must attend to a sequence of ideas and observe the relationship of events which, though separated in time, are brought together in anticipation of alternative consequences expected to follow different immediate actions.

These regulatory maneuvers, similar to the influence techniques employed by Moustakas, et al. (1956) to describe mother-child interactions, have been found to relate to a variety of cognitive behaviors in the child. Moreover, such concepts have proved to be effective in predicting whether a child will take an assertive-exploratory or passive-compliant approach to his environment and whether reflective or impulsive behaviors will occur in problem-solving.

These control techniques were assessed by 1) interview questions asking how the mother would handle minor discipline problems; 2) the "First-Day-of-School Question" which asks the mother to imagine that her child is ready to enter school for the first time and to say how she would prepare him for this experience; and 3) structured mother-child interaction situations.

4. Teaching techniques: These refer to how the mother organizes and gives meaning to the information that reaches her child and to how she helps him make sense of new information. Differences observed among mothers may be conceptualized as differences in complex, multidimensional behavior which ranges from the restricted, repetitive, and reactive to the more elaborated, varied, and proactive. Since this area is discussed in the section on the Hess and Shipman Toy Sorting Task, it will not be elaborated here.

5. Language process variables: The environmental antecedents and behavioral consequences (for both mother and child) of elaborated versus restricted codes constitute the central theme of Bernstein's theory and the Hess and Shipman

research. These codes are seen as important mediators of the environment--the notion is that environmental restrictions on behavior become translated via language into restricted modes of information processing and problem solving. The relationship of these codes to the control techniques used by the mother and the resulting consequences for the child's cognitive behavior have been discussed in previous papers (Bee et al., 1969; Hess & Shipman, 1968b; Olim, Hess, & Shipman, 1967).

In addition to data on the nature of the language model presented to the child from the interaction situations, information was obtained in the interview on the variety of contexts in which the child can learn language--e.g., types of books, magazines, and newspapers read in the household; reading materials specifically for the child; use of radio and TV; and time spent by an older member of the household in reading to the child.

6. <u>Differentiation of the environment--knowledge, attitudes, beliefs</u>: All theories of development, whether cognitive or social, revolve around the individual's progressive differentiation of self and environment. To paraphrase Piaget on the subject, each stage of development begins at the boundary of self and external world and proceeds to differentiate in both directions at once (Flavell, 1963).

The importance of such progressive discriminations is made obvious and explicit not only in Harvey, Hunt, and Schroder's conceptualization (1961), but in many other theories as well--from Lewin's field theory to socialization theories based on Freud (Baldwin, 1967). The more cognitively oriented theories, however, have gone farthest in specifying the characteristics of belief systems which are open and differentiated versus those which are closed and undifferentiated (Rokeach, 1960; Rotter, 1966). Likewise, the more cognitively oriented theories have made the most specific linkage between available differentiations in the environment and the child's developing belief systems and ability to make discriminations (Bernstein, 1964; Harvey et al., 1961). For these reasons, major emphasis in studying family variables has been given to cognitive variables, broadly speaking, that influence the child's perceived differentiation of the environment and cognitive and affective styles of interacting with it. In particular, we are concerned with the mother's objective differentiation of the world (her knowledge of it) as well as her subjective differentiation (her attitudes and beliefs about it). The aspects of the mother's environment we are focussing on are: child, school, local community, and the larger educational system.

One of the functions of the family is to provide a context in which the child interacts with other people and thereby develops a sense of self (Hawkes, 1957). Of critical importance in the process is the mother's perception of the child, reflected to him in innumerable ways and serving as a powerful model for his developing self-concept. To assess the mother's individuation of her child, we designed interview questions eliciting specific knowledge of the child in various cognitive and social-personal areas as well as general expectancies regarding his future behavior and abilities.

Items have also been included to assess the mother's 1) definition of school that she directly and indirectly teaches her child as she socializes him into the role of pupil; 2) knowledge of the community; and 3) differentiation of the larger educational system (e.g., attitudes toward present functioning of the educational system with respect to low-income families and the mother's differentiation of what makes a good and bad teacher).

It should be noted that we are not listing achievement press separately as a process variable, mainly because, as commonly defined, it is already subsumed by the previously listed process variables. Measures relevant to achievement press include: parental aspirations for the educational and vocational development of their children; parents' self-aspirations and expectations; interest in academic achievement; parental guidance in the attainment of educational goals (e.g., helping with homework and mode of teaching in the structured interaction sessions); use of reinforcement to shape children's behavior; and knowledge of both the educational system in which the child participates and the educational process of the child within (and outside) the system (e.g., knowledge of and reaction to the child's test performance and, later, to his school grades). In accordance with the findings of Crandall, Preston, and Rabson (1960) emphasis is being placed on the mothers' direct reaction to their children's achievement efforts. In addition to indices such as these, we will specifically note whether there are models in the house exemplifying the results of advanced education. Enrollment in Head Start or other preschool settings of children in the family may also be used as an indication of the parents' orientation to academic achievement.

Affective aspects of the parent-child relationship have similarly not been singled out as a broad category of process variables to be investigated in this study. In the past, the exchange between mother and child has been conceptualized and studied primarily in terms of affective and disciplinary behavior, with autonomy-control and affection-rejection appearing frequently in factor-analytic examinations of mother and child (Schaefer, 1959). We accept these as critical dimensions but choose to focus initially upon another feature--the cognitive aspects of the exchange and the cognitive consequences to the child of the affective and control strategies employed by the mother. Subsequent analyses will focus on affective and social outcomes in the child and interactions between cognitive and personal-social functioning. One of the consequences of the control technique employed by the mother is the child's attitudinal approach to problem-solving situations.

Two general criteria for selecting situational and status variables were given in the opening statements of this section--i.e., significance in (a) defining important aspects of the child's psychological as well as physical environment, and (b) identifying subpopulations which should be analyzed separately. To these general criteria we added the common-sense standards of taste with respect to invasion of privacy and the probable accuracy or usefulness of the obtained information.

Within the framework of these general criteria, then, the study seeks information which relates to the degree of environmental stimulation available to the child and which more clearly defines his poverty in terms of material things and conditions taken for granted by the dominant culture. As pointed out by Archibald (1967), the culture of the urban black child (or any disadvantaged population) is a matter of "Poor and what else?"--and it is the "what else" which is generally critical. The following specific variables have been included in an attempt to shed further light on "what else":

1. Information for identifying subpopulations: Such information consists of age, sex, and race of child; age, race, and occupation of parents; language spoken in the home; locale (urban-rural); and type of dwelling place. Information regarding welfare status of the family will be obtained later in the study from the relevant welfare agency.

2. Educational level of parents

3. Family structure (i.e., presence of father in the home)

4. Number of adults in the household, particularly adult availability as defined by adult-to-child ratio

5. Number of other children in the household

6. Home resources: availability of books, toys, records, radio, TV

Included among these variables are those that have been traditionally used to assign social status to subjects. Although we recognize the divergent conceptions of how important various aspects of social stratification are, there is sufficient agreement among the many indices of social status to serve most research purposes. Hess (in press), in reporting on a factor-analytic study of 19 stratification indices, found variables closely related to occupational level, education, and residence to account for most of the variance. It is interesting that income was the least effective of the 19 variables in indicating socioeconomic status, as evaluated by agreement with other well-known measures.

As summarized in a review by Green, Hofmann, and Morgan (1967), the kinds of variables listed previously (2-6) have been found consistently related to children's intelligence and achievement level. The national evaluation results of 1966-67 Full Year Head Start programs (IED, 1968) indicated these same variables as significant predictors of initial Binet performance and, in some cases, of gains made during the year. This finding may be explained by the variables' logical relevance to the amount of cognitive stimulation and/or emotional support available for the child. Hess et al. (1968) report that lower-class black mothers who have larger families are more likely to appeal to power and punishment in controlling their four-year-old child, to spend less time reading to him, and to exert less pressure for achievement. It should be recognized, however, that although stimulation level is considered an important factor in intellectual growth, the relevance of variables 4-6 suggests that it is not <u>amount</u> of stimulation, but the patterning and nonrandomness of such stimulation, which is crucial for cognitive development. Finally, it should be noted that changes in variables 1 through 6 may be relevant to assessing the upward or downward mobility of the family during the period of the study.

7. <u>Ordinal position of the target child</u>: While the relevance of this variable is not immediately obvious, support for its inclusion comes from several studies. Freeberg and Payne (1967) found that sibling rank (as well as family size) correlated with several dimensions of childrearing practice. They concluded that both of these factors influence the extent to which a parent can engage in a variety of activities that inherently require sustained participation. In a recent review of subcultural differences in child language, Cazden (1966) refers to Vera John's finding of a birth-order effect on language development within a sample of lower-class black children. It is recognized, however, that the age and sex of other children in relation to the target child will interact in determining specific effects. For example, father's absence may be expected to be a more interfering factor when the target child is an only boy with older female siblings.

8. <u>Behavior patterns of older siblings</u>: On the assumption that older siblings are important potential models for the child, we included questions which relate to the older children's school achievement, attitude toward school, membership in peer groups, etc. These data will be collected in later years as the target child is ready to move into his siblings' world.

9. Conditions constituting "stress" for the child: It is hypothesized that a number of family conditions (not infrequent within the ghetto culture) serve to constrict the child's psychological environment and create a stressful situation.

These include:

a. Instability or frequent mobility of the family

b. Severe or recurrent illness in the family

c. Erratic versus relatively steady employment history

d. Physical and psychological "depression" of the home and surroundings--e.g., repair of the dwelling inside and out, lighting conditions inside the home, potential hazards in the neighborhood (broken glass, location near a bar), etc. Ratings on these variables were made by the interviewer following each interview. In addition, each interview included a rough index of crowding (i.e., ratio of rooms, excluding bathroom, to people in the household).

10. Child's possessions--material objects and living space: Insofar as possible, information was obtained on the number of things (books, toys, etc.) the child possesses; on whether he has a designated space in the household for his things (a closet or drawer space); and on whether he has places (a room, a bed) that are his own or which are available for his private use. This variable is not only an aspect of individuation, but also a particularly important need for the ghetto child, who often has nothing to call his own nor any place which he may escape to for peace and solitude.

11. Child's range of mobility: Relevant to amount of environmental stimulation is contextual variety of environment. Where is the child allowed to play inside and outside the house? Where is he allowed to go in the neighborhood? On what excursions outside the house is he taken (supermarket, visiting relatives, etc.)? It is only logical to expect that the number of different places a child goes to and different encounters he has will largely determine the variety of stimulation available to him.

Our strategy for assessing the process, situational, and status variables discussed in the preceding section has been to collect data via a home interview and via mother-child interaction sessions administered at the testing center. The results to be discussed here apply only to the interview and then only to the closed-ended questions of the interview. Consequently, those process variables subsumed by control techniques, teaching techniques and, to a large extent, language process variables, await future analysis and elaboration in subsequent reports.

Procedure

The development, piloting, and training procedures for the Parent Interview have been described in detail in Chapter 3. Local community women, primarily housewives, administered the interview to the mother or maternal surrogate at a time agreed upon in advance. At least three appointments were made (on different days and at different hours) before we considered the respondent a refusal.

As everyone familiar with home interviewing will understand, interview conditions varied from a relaxed two-person chat on the living room sofa, to sitting at the kitchen table experiencing several interruptions from neighbors and children, to standing in a crowded one-room apartment. Thus, though the interview was completed on the average in 75 minutes, interview time ranged from 45 minutes to two hours. For 20% of the interviews, the noise level was high enough to be rated distracting.

A copy of the interview may be found in Appendix B. As will be seen, items were organized in three parts--those referring to the child and school, to the community, and to personal and family matters. The order of items is deliberate. We have found that most mothers are willing to talk about their children; then, as rapport with the interviewer is established, they become more willing to discuss more personal matters, such as age, employment, etc. Interviewers rated 92%-96% of the respondents cooperative or very cooperative on the three parts of the interview.

As summarized in a recent critique by Yarrow, Campbell and Burton (1968), factors of social desirability, generality, and inaccessibility to observation are common faults of interview questions which affect the validity of reporting. When one evaluates the present interview in terms of these validity considerations, several conclusions become apparent. First--and most important--it is obvious that the question of accurate reporting is not as relevant for many parts of our interview as for the typical instruments surveyed by Yarrow, Campbell and Burton. This is true because our conceptualization and interpretive framework do not rely heavily on assumptions about the actual occurrence of specific, independent instances of behavior. Manifest behavior is obviously important, but only insofar as it reflects underlying consistencies in information processing and response strategies. Our conceptual framework depends mainly on the assumption that a mother's perception of the environment (beliefs and attitudes) and characteristic styles of interacting have pervasive effects on her behavior which critically influence the child's development.

Although interaction with other people is important (increasingly so in later years), the mother is viewed here as the major socializing agent for the child in his early preschool years.* That is, she assumes a critical role as major interpreter and reflector of "reality" during a time when the child is busy constructing reality for himself and developing information-processing strategies and response styles appropriate for dealing with it. If the child's strategies and styles inhibit progressive differentiations of self and environment, then his development will be arrested. In her role of socializing agent, it is the mother's own perceptions and styles which largely determine the constriction or openness of the environment she structures. It is essential to understand this conceptualization, because it puts the notion of "validity" in a somewhat different light. For the most part, correspondence between verbal report of parental practices and actual behavior is not a primary concern in interpreting the proposed interview data. Rather, attitudes and beliefs about meaningful aspects of the mother's environment are the focus of interest for a substantial portion of the interview questions.

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*We recognize, however, the dearth of research concerning the father's influence on the development of the child in the early years--a lack resulting primarily from practical problems of doing such research. Previous research would lead us to expect that mothers and fathers would differ in their teaching styles, particularly with regard to interaction with a same- or opposite-sexed child, and that the same behavior would be differentially effective depending on sex of parent and child (Bayley & Schaefer, 1964; Busse, 1967; Kagan & Moss, 1961; Katovsky et al., 1967). Still, in the majority of families the mother or mother surrogate is the one most available to the child, and research has indicated the relatively less frequent and uninvolved interaction of the father with the young child (Freeberg & Payne, 1967). This is particularly true of the black low-income family, in which there is a relatively much higher incidence of father absence reported (IED, 1968; Joint Commission on Mental Health, 1969; Rainwater, 1966). It is recognized, however, that in intact homes, the mother's behavior in relation to her child is likely to reflect, in varying degrees, procedures worked out jointly by the parents; it is also probably in part a product of her own adaptation to her husband's needs and her relationship with him.

Since requests for such information (attitudes and beliefs) are less likely to be threatening than direct questions about behavior, they are less subject to a social desirability response bias. With respect to the sampling problem caused by vague or very general questions, our greatest emphasis is on attitudes, beliefs and expectancies that are specific to objects of central importance in this study--i.e., child, school, and community.

Some interview questions do not pertain to attitudes or beliefs, but to the mother's knowledge about her child, school and community. Although checks will be made on the accuracy of various responses to these questions, particularly those regarding the child's abilities and social behavior, it is not the absolute validity of the information which is of primary concern. Rather, response interpretation is largely in terms of the degree to which the mother's knowledge reflects differentiation of the environment and individuation of the child. We would expect mothers who have global and diffuse perceptions to be less accurate in their verbal reports than mothers with highly differentiated perceptions.

A final subset of questions does involve the inference of actual behavior from verbal report. These questions relate to the mother's participation in activities, her utilization of community and home resources, and varied factual information about home and personal history. While grossly distorted responses are not anticipated to such questions, they will be checked for accuracy wherever systematic validity checking will be virtually impossible (e.g., time spent reading to the child).

Results

Discussion of results will follow the interview sequence: responses to questions concerning (a) the child and school; (b) the community; (c) personal and family information. Given the disproportionalities and interactions among classifications described in Chapter 2, the reader must be cautious in his interpretation of the data.

In accordance with previous findings, most mothers reported some difficulty with their child. For the combined sample, the most frequently reported problems were temper tantrums (23%) and over-activity or restlessness (63%). On the Winterbottom questions (Q. 22-30 in the interview) and selected items from the Preschool Inventory, however, mothers tended to say their child could do the various tasks "now." In some cases this appeared to result from their having differentially defined a behavior relative to the child's present age (e.g., 17% said their child earned spending money now); in other cases a strong social desirability factor may have been operating. However, the data may also reflect undifferentiated evaluation criteria and/or the mother's lack of knowledge about her child's achievements. This seemed particularly so for those items, added to the Winterbottom ones, which concerned the child's ability to name the primary colors, his full name and various body parts, and to count to five. 56%, 88%, 95%, and 83% of the mothers said their child could do each of the above tasks "now" -- markedly contradicted by their child's performance on those same items on the Caldwell. Similarly, 87% predicted that their child would do average-or-better work when he entered grade school. For all items, however, there was a range of responses and a small but significant number of mothers who said they did not know.

Almost all sample children were reported to have drawing materials in the home (93%), and 84% of the mothers said hey read or told stories to their child. More important, though, only 39% reported reading to their children more than once a week, and 35% did not know or could give only vague responses when asked what their child's favorite story was.

Consistent with previous research findings, educational aspirations were high with most mothers reporting they wanted their children to attend college (Mean grade: 14), but they expected that they would only graduate from high school.

Although a majority of parents responded positively when questioned about their neighborhood schools, a sizable minority indicated discontent. Thirty-one percent felt that teachers in their district schools do not understand area problems; 31% also felt that teachers make children doubt what they are taught at home. Also, 13% felt that facilities in their neighborhood schools were poorer than in other city schools, 52% reported overcrowding, and 43% felt that teachers neglect some children in their classes. (Future coding of the open-ended responses will be concerned with the more important question of the reasons given for teacher neglect.) Although 74% stated they felt they could disagree with the school principal, 29% said they could not improve their neighborhood schools--with an additional 19% not knowing whether they could or could not. Indirectly related to parental responsiveness to the educational system is the fact that a substantial number of mothers (37%) felt they were not even partly responsible if their child did poorly in school; and 44% said that children had to be made to learn.

In discussing their communities, a substantial number of mothers revealed they did not know what local nursery schools, clinics, summer day camps or after-hour school programs were available (18%, 8%, 30%, 29%, respectively); 12%-16% did not know whether there were any art galleries, museums or live theaters in their neighborhood. A majority of mothers (61%) felt that political candidates run more for personal advancement than for accomplishing campaign promises, and 32% of the mothers had never voted. A generally negative and despairing attitude is reflected in the following figures. Although 61% reported they would join their neighbors to solve local problems, the majority of them felt their efforts would be ineffective. Similarly, although a majority (55%) described a problem in the community that had needed attention, they also reported the needed improvement did not occur. For many (34%) there was no local person presently successful in solving community problems, it was not safe for their child to play outside (22%), and, probably as a consequence of these and other complaints, the majority of mothers (59%) would not recommend that anyone move into their area. As previously found with lower socioeconomic groups (Hess et al., 1966, 1968; Horowitz & Rosenfeld, 1966; Litwak, 1966), most mothers reported belonging to no clubs or groups; memberships that did occur were primarily in school-related (e.g., PTA) and religious groups. Seventy-four percent of the mothers reported attending church (usually outside their neighborhood), with 45% attending once a week or more.

In the present sample, 75% reported being married, but 18% were permanently separated from their husbands or their husbands were temporarily away (2% of the children had a parent in the military service). At the time of the interview, 36% of the mothers were working (with another 10% looking for jobs); most of them (43%) held full-time blue-collar jobs as service workers. Eleventh grade was the average grade reached in school, and a majority of mothers reported being dissatisfied with the education they had received. In possible partial consequence of this fact, 40% have returned for additional schooling. Fathers also, on the average, had an 11th-grade education: most of them (41%) were employed as operatives (level 7 on the 10-item Duncan scale) or in a lower-status job. For those households with husbands present, 84% of the men were employed.

In 69% of the cases, the sample child was already four years old when the interview was completed. A grandparent resided in 16% of the households, and 17% had an older sibling who had attended a preschool program (11% in Head Start; 6% in another preschool program). In 10% of the households a foreign language was also spoken.

The families in our study have lived 3.6 years, on the average, in their present home, 5.5 years in the neighborhood and 16 years in the city; except for the last statistic, however, the standard deviation is larger than the mean. Fifteen percent of the sample have moved three or more times in the past three years and 53% of the mothers reported they presently wanted to move. Most of the families (48%) live in single, one-family homes, with 22% living in duplexes and 15% in public-housing multi-story apartment buildings.

The interviewers rated 87% of the homes as old, 32% of these being rated as in poor repair.

Although nearly all families had a TV set (97%) or radio (92%) in the home, a substantial number had no car, phonograph, telephone, encyclopedia or dictionary (38%, 23%, 26%, 53% and 21%, respectively). Of the children, 25% to 35% did not have their own bed or place to keep clothes, toys, and other possessions. Only 17% of the children slept alone, and 12% slept with one or both parents.

Most study families (83%) had relatives living within 20 miles whom they visited, but other types of social interaction were less common for many of them. Twenty-eight percent of the mothers said they had no friends at all in the general area, and 32% said they did not go out for entertainment.

Site differences: Trenton mothers reported their child as having more temper tantrums, acting younger, being more active and restless and spending most of his time by himself; St. Louis mothers reported their child to be more afraid and crying more; whereas Portland mothers reported significantly fewer problems. Similarly, Portland mothers more often stated that they expected their children would get along better than average in school (32% vs. 20% in Trenton and 21% in St. Louis).

For most of the Winterbottom items, Portland mothers had a younger expected mean age of attainment, while St. Louis mothers had the oldest expected mean age of attainment. More mothers in Portland also reported that their children already knew the four Caldwell items. Mean aspiration level and expected level of future school attainment for their children were also higher in Portland. Congruent with these findings, Portland mothers reported reading to the sample child significantly more often (90% vs. 85% in Trenton and 74% in St. Louis), with fathers also reported as reading to the child more often. In actual number of hours per day reported as being spent with the study child, Portland and Trenton both stated 10 hours on the average, whereas the mean number of hours was 8 for St. Louis.

Trenton mothers were generally more positive in their response to the several questions about the facilities and teachers in neighborhood schools. Their child's learning, however, was not felt to be their responsibility. Forty-six per cent vs. 31% for Portland and 34% for St. Louis said they should not be blamed for their child's poor school work.

Portland mothers responded with a greater sense of their effectiveness. Only 21% (vs. 35% and 37% for Trenton and St. Louis, respectively) stated they did not feel they could do anything to improve the schools. Similarly, 84% (vs. 66% for both Trenton and St. Louis) felt they could disagree with the principal. This more active orientation of Portland mothers may be seen as indirectly reflected in the smaller percentage who felt children had to be made to learn (24% vs. 31% and 37% for St. Louis and Trenton, respectively). It is directly reflected in the fact that Portland mothers reported having sought more outside help for medical, legal and educational problems, and their problems were usually taken care of. (In contrast, St. Louis mothers, who reported seeking help more often for job-related problems, also reported a higher percentage of unresolved cases.) Differences in voting behavior were also indicative of these differences across sites in feelings of efficacy. Seventy-three per cent of Portland mothers have voted (vs. 68% and 59% in Trenton and St. Louis, respectively). Paralleling these site differences are differences in the percentage of mothers who felt candidates run for office for their own gain.

Site differences in feelings of belongingness were also evident. More Portland mothers reported belonging to groups, especially religious and social groups, whereas membership in groups was markedly lower in St. Louis. One seeming inconsistency in the results was the substantially higher percentage of Trenton mothers who belonged to school-related groups. This membership, however, may be restricted to the PTA and may be confounded by differences across sites in the number of school-age children in the family. It may also reflect a more active participation in local concerns, since a small but greater percentage of Trenton mothers belong to community action groups, a significantly larger percentage said they would join their neighbors to solve a local problem, and a larger percentage felt parental control over schools would be a distinct improvement.

The smaller percentage of Portland mothers involved in community concerns may reflect a smaller incidence of problems where they reside. Consistent with this interpretation is the fact that 91% (vs. 63% and 66% in St. Louis and Trenton, respectively) consider their neighborhood a safe place for their children to play, and 46% (vs. 36% and 16% for Trenton and St. Louis, respectively) would recommend their neighborhood to a friend.

Educational and occupational levels are highly associated with socio-economic status. As shown in Chapter 2, Portland mothers and fathers are somewhat higher on both indices. There are also a higher percentage of intact families there (66%). In contrast, there are more homes with the father absent in St. Louis (47%), the child/adult ratio is larger (3.0 vs. 2.5 and 2.1), and mean educational and occupational levels for both mother and father are lower.

To describe the household: more sample children in St. Louis were already age 4 at the time of the interview (consistent with their older age at time of testing, a matter discussed in Chapter 2). Both Trenton and Portland had 7% of the families with older siblings who had attended a pre-school program other than Head Start (vs. 3% for St. Louis), but 14% and 15% of the families in Trenton and St. Louis vs. 6% in Portland had older siblings who had attended Head Start. This latter difference may reflect differences in eligibility for Head Start, as suggested by the differences in socioeconomic status discussed previously. We would expect differences in attitudes towards education, achievement orientation, and alienation to be associated with these differences in prior family participation in Head Start and other preschool programs.

Families in both Portland and St. Louis have moved significantly more often than those in Trenton. Considering the different composition of the Portland and St. Louis samples and differences in neighborhoods, one would hypothesize, however, quite different reasons for moving in the two communities. In Portland, there was a significantly greater percentage of moves between neighborhoods, whereas most moves in St. Louis were within the same neighborhood. In the public-housing areas we found that many of the families had moved because of constant sniper attacks and the possibility of being evicted because of their involvement in a concurrent rent strike. A larger percentage of our St. Louis families were also long-time residents of the city. Only 1/4 of the sample had lived in St. Louis 14 years or less, as opposed to approximately 50% in the other two sites. In contrast with one's expectations, long-time residence has not resulted in greater community involvement and interaction for most of our St. Louis families.

Differences in possessions across sites is reflected in the following table.

Table 4-1

Percentage of Families in the Three Sites
Not Owning Certain Household Articles

Site	Car	TV	Radio	Phonograph	Telephone	Encyclopedia	Dictionary
Portland	25	2	7	17	16	49	16
Trenton	41	2	8	27	33	51	20
St. Louis	58	3	11	29	34	64	32

Similarly, the percentage of study children having their own room ranged from 27% in Portland to 8% in St. Louis; those who had their own bed ranged from 73% to 51%, respectively. Percentages for Trenton approximated those for Portland. Twenty-two percent of the children slept alone in Portland vs. 7% in St. Louis; 26% of the children in St. Louis slept with one or both parents vs. 8% in Portland.

Other aspects of deprivation were noted in St. Louis, with a much smaller percentage reporting reading newspapers or magazines regularly and a much larger percentage reporting visiting no friends in the general area and not going out for entertainment. Other social patterns differed across sites, as most families walked to shop in St. Louis (45% vs. 10%-11% in Portland and Trenton) and, perhaps as a consequence, were less likely to have the sample child accompany them (57% vs. 74%).

Most families in Portland lived in single-family dwellings (80% vs. 32% in Trenton and 9% in St. Louis) and had a yard where the children could play. In contrast, 36% of the families in St. Louis lived in a public housing apartment building (vs. 15% in Trenton and 3% in Portland). Much of the housing in St. Louis was rated as old and in poor repair (43% vs. 28%-29% in Trenton and Portland). Crowdedness was significantly more frequent in St. Louis. On the average there were two less rooms in St. Louis homes, and the ratio of rooms to people was 0.7 in St. Louis vs. 1.1 in Trenton and 1.3 in Portland. The study area in St. Louis contains some of the oldest areas in the city; business streets in the Jackson and Blair districts are lined with vacant stores. The Pruitt-Igoe apartments in which some of our study families live represent the worst in public housing. Their image, as projected in local newspaper articles, is of a place where crime, vandalism, and other anti-social behaviors are high.

Sex differences: In discussing their children, mothers of boys described them more often as active or restless, whereas mothers of girls more often described them as asking more questions, acting older, and being more afraid. On the Winterbottom and Caldwell items, although differences were small in magnitude, they were consistently in favor of girls.

There was a small but consistent trend for parents of girls to be more involved. They reported reading to their children more, expressed more complaints about the schools, felt more responsible for poor school work, felt they could talk to the principal, and had sought more help for educational problems. They also had a small but consistently greater percentage of group memberships, especially in school-related groups, and more mothers of girls had returned for additional schooling.

In comparing household information, we found boys tended to be slightly older at the time of the interview, and had slightly more siblings with previous Head Start and other preschool experience.

Consistent with differences in reading to their children, mothers of girls reported more frequent use of newspapers and magazines and reported more encyclopedias and dictionaries in the home.

Differences in response to other interview questions were negligible.

Preschool differences: In describing their children, mothers of children who later attended Head Start described them as more active and questioning and as having more temper tantrums. Children not known to have attended preschool were described more often as crying more, as less happy, as acting younger, and as likely to have more problems adjusting to school. For all these areas, a smaller percentage was noted for children who were to attend other preschools. A higher percentage of preschool mothers reported they expected their child to get along better in school, and more of them said that their child already knew the Caldwell items.

Consistent with the above, more "Preschool" mothers and fathers were reported reading to their child at least once a day, and significantly more mothers knew the title of their child's favorite story. In estimating their child's work when he entered first grade, only 5% thought their child would rank in the lower half of the class, as contrasted with 15% and 13% for the "Head Start" and "Other" groups. Similarly, they had higher aspirations and expectations for their child's eventual educational attainment. Differences in expected educational attainment were particularly marked between the preschool attendance groups. Of the "Preschool" mothers, 41% expected their child to attend college, vs. 22% for the "Other" group and 20% for the "Head Start" mothers.

Although all groups gave predominantly favorable replies about their neighborhood schools, "Preschool" mothers consistently expressed more negative responses and more belief in their ability to do something about their dissatisfaction. They also sought more outside help for the various problems listed and reported a greater percentage as eventually resolved.

In describing their communities, "Preschool" mothers reported greater availability of each facility listed, while mothers of those with no known preschool attendance reported less available facilities. It is especially interesting to note that a greater percentage of mothers (40%) whose children did not to our knowledge attend any preschool program reported either no nursery schools available in the area or not knowing whether there were any.

Consistent with the previous responses, more "Preschool" mothers had voted; more felt they would be effective if they joined their neighbors to solve a local problem (although differences in the initial number saying they would join their neighbors were negligible); more felt their neighborhood was a safe place for their children and would recommend it to a friend.

Table 4-2 shows the consistent differences between groups in their membership in various groups. Preschool mothers also reported greater church membership (88% vs. 75% and 71%).

A higher percentage of "Preschool" mothers reported working (58% vs. 37% for "Others," and 30% for Head Start), and more of their jobs were at the clerical level, whereas the majority of jobs held by mothers in the two other groups were at the service worker level (e.g., domestic worker). Similarly, the "Preschool" mothers averaged a year higher grade attended than other mothers. "Preschool" fathers also had attained a higher grade in school than either the fathers of Head Start children or those in the "no known preschool" group and had a higher mean job level.

Table 4-2

Percentage of Group Membership Classified by Preschool Status

Type of Group	Head Start (HS)	No Known Preschool (Other)	Other Preschool (PS)
Religious	20	15	39
Social	9	10	29
Community	7	9	13
School-Related	35	28	38
Political	6	4	19
Other	5	10	12

Fewer mothers in the Head Start category reported being married (68% vs. 80% for "Other" and 73% for the Preschool group), and of those married, a smaller percentage had husbands presently in the home (74% vs. 84% and 89% for the "Other" and "Preschool" groups, respectively). Thus, many more children who enrolled in Head Start came from nonintact families (50% vs. 33% and 35% for the "Other" and "Preschool" groups, respectively) and had a higher child/adult ratio (2.8 as contrasted with 2.3 and 1.7).

Characteristics of other household members also differed across the preschool attendance classifications. There were no households with more than nine members in the "Preschool" group; the other two groups had several families with 15 or more members. As shown in Table 4-3, preschool attendance patterns of older siblings were significantly associated with the study child's enrollment.

Table 4-3

Percentage of Previous Attendance by Older Sibling in Preschool Programs According to Preschool Attendance Classification

Preschool Attendance	Previous Programs: Head Start	Previous Programs: Other Preschool
Head Start	17.0	6.0
Other Preschool	2.4	16.7
No Known Preschool	8.0	4.3

As might be expected from the responses already noted, more parents of children who attended other preschool programs owned the several household items listed and their children were more likely to have their own bed and room. Parents of Head Start children, on the other hand, reported the fewest possessions. Consistent with the greater stimulation thus available in the home, more "Preschool" parents often reported reading newspapers and magazines regularly, visited friends in the general area, and took their child shopping with them and to places of entertainment.

Consistent with the differences in educational and occupational indices of socioeconomic status, more "Preschool" parents lived in single-family dwellings (58% vs. 47%), were less crowded, and had a smaller percentage of homes rated as old and in poor repair (15% vs. 30% and 39% for the "Other" and Head Start groups, respectively). A minority of families lived in public housing, but of these a greater percentage were families whose children were not known to have attended a preschool program. There were negligible differences in mobility patterns across groups.

Discussion

The findings reported from the interview are, in general, consistent with those previously reported for urban working-class samples. In contrast with the situation of middle-class families, we find not only limited availability and less use of home resources, but also less social and community participation, more feelings of powerlessness and despair, and greater discrepancy between aspirations and expectations.

The families in our sample who sent their children to Head Start in the fall after our initial testing were on the average characterized by greater deprivation than those in the other preschool attendance categories. They had fewer material possessions, lived in older, more run-down homes, and under more crowded conditions. Fathers were absent in 50% of the homes. However, in contrast to those families who were not known to have sent their children to a preschool program, the Head Start families expressed somewhat more favorable attitudes towards their area schools, expressed more active responsibility for their child's school performance (30% vs. 25% felt parents were to blame if their child did poorly; 13% vs. 17% approved keeping their child home from school to help out at home), and were more optimistic about their child's success in school. Head Start mothers, in contrast to mothers in the no-known preschool group, also participated somewhat more in the community. They were more aware of others in the community who were successful in solving local problems; a higher percentage of them had voted in the last election, and a somewhat higher percentage felt greater parental control of the schools would be an improvement.

For the most part, information about the family background of Head Start participants has been reported as an adjunct to research data on other specific topics. Unfortunately, collection of information about family background is often studiously avoided. To quote from Hodes (1966):

> ...No effort was made to match groups according to race, occupation of parents, number of children in family, or other personal and socioeconomic factors due to lack of available information. The school district indicated some possible lack of acceptance by the community if certain factors were injected into the study.

Thus the Hodes study presents data only for certain educational characteristics among three groups of kindergarten children: culturally disadvantaged children who attended a summer Head Start program, culturally disadvantaged children who did not attend Head Start classes, and children who were not culturally disadvantaged.

In contrast with previous findings (Allen, 1967; Chandler et al., 1966; Coker, 1966; Coleman, 1966; Furuno, 1967; Loewenberg, 1967), mothers who sent their children to Head Start were not of higher educational level than low SES mothers who did not, nor was there a higher percentage of intact homes. However, consistent with previous research (Furuno, 1967; Allen, 1967), those children who were enrolled in Head Start were more likely to have older siblings who had attended Head Start, and their mothers belonged to a few more groups. The families' prior exposure to the Head Start program may account for their greater involvement with the schools and community; of course, it is equally possible that such involvement on their part may have led to their enrolling their children in the Head Start program.

As we pointed out in Chapter 2, the variables defining the several groups are confounded, and so no simple main-effect comparisons for classificatory variables such as between sites or Head Start vs. non-Head Start can be made without careful consideration of their interactions with other variables. For example, preschool attendance is confounded with site, race, and the four indicators of socio-economic status (mother's and father's educational and occupational levels). Thus, to interpret simple mean differences for Head Start versus non-Head Start groups would be quite hazardous. It has been shown, for example, that the percentage of Head Start homes without fathers differs significantly with regard to race (IED, 1968). Moreover, we could not assess degree of participation in the Head Start program, and previous research has taught us to expect significant differences between high- and low-participation families (Adkins & Herman, 1970).

It should be noted, however, that previously found correlational patterns among family status and process variables are suggested by the pattern of responses within our groups. Thus, greater availability and utilization of home resources is evidenced in those groups of somewhat higher socioeconomic levels. Symptoms of apathy, alienation, and powerlessness also clustered together. As might be expected, where there was greater participation in events there were also greater feelings of efficacy and optimism. Mothers' feelings of efficacy were associated (by group trends, not correlational data) with higher aspiration levels and increased achievement press for their children. High motivation to achieve is associated with high expectancy of success. In accordance with other findings (Hess et al., 1968; IED, 1968; Shipman, 1967; Slaughter, 1968), these data suggest a correlation between mothers' value for school achievement and their own educational level.

In addition to attempting to tease out the interactive effects of confounding variables, we shall direct future analyses toward the relationship of the various status and process variables with each other and with the several child measures. As should be evident from the preliminary data reported here, within a predominantly low socioeconomic sample, considerable variation in responses is obtained. Such variations are hypothesized to have important implications for the child's cognitive, social, and emotional development and for later school adjustment.

Several of these hypothesized relationships have been discussed earlier. To the extent that the mother feels her community to be safe, supportive, and controllable, her encouragement of a more positive self-concept and a more internal locus of control in her child are to be expected. In accordance with previous research findings (Hess et al., 1966; Shipman, 1967), one would expect a significant relationship between level of aspiration and expectation concerning her child's schooling and the child's cognitive performance. Similarly, higher mean age expectancies for the various achievement items would be hypothesized to be associated with poorer performance. The magnitude of the relationship, however, would be expected to vary according to sex of child (Gervasi, 1969).

The provision by parents for the child to participate in conversation and activities with adults at home, and attempts to enlarge his vocabulary (e.g., by reading to him, having books and newspapers available) have been found to be related to the child's verbal and academic achievement (Bing, 1963; Dave, 1963; Hess et al., 1968; Milner, 1951; Slaughter, 1968).

Physical factors have also been shown to have important relationships to maternal and child behaviors within a low-income population. Crowdedness has been shown to be correlated with Binet performance prior to preschool intervention (Hess et al., 1968; IED, 1968). Hess et al. (1968) also found degree of crowding in the home to influence the maternal strategy adopted to control the child. So also did the richness and utilization of home resources and the extent of the mother's interaction with the community. A relatively uncrowded home, active community participation, and fairly extensive use of home resources were found by these authors to be related to the mother's tendency to see herself as an effective, active member of the community and to the manner in which she interacted with her child. Mothers who felt more optimistic about their chances to improve their lives and less powerless with respect to the school also tended to put greater pressure for achievement on their children; their children in turn performed better on a variety of cognitive tasks. The point of view offered here is that the mother is particularly influential in transmitting to the young child behaviors and adaptations shaped by the environment. In later years the environment may increasingly exert direct influence upon the child, but during the preschool phase of the study the exchange between mother and child must be the focus of our attention. This exchange seems to be linked to the contingencies of the environment which the mother herself experiences. Her behavior is, of course, a function of her own ability to deal with the problems of her environment. To the extent that the mother's behavior affects the development of her children and prepares them for school, her behavior and attitudes--expressing value patterns on which other behavior might be based--can be regarded as maternal teaching styles.

Other analyses will be directed towards comparisons between various subgroups suggested by the data--for example, those families who had older siblings in the Head Start program and those who, though eligible, had not participated; those homes with the father present and those with him absent. Although the results reported in the research literature on father absence are generally confounded by other variables, such as socioeconomic status, there is some evidence to suggest cumulative decrements that a longitudinal study may be able to assess (Hess et al., 1969).

Section B

Child Health Record

Background

The physical development and status of the child is recognized as an important mediating system for understanding other aspects of his developmental history and his present functioning. Moreover, as Gordon (1968) stated in an earlier report, "the high incidence of suspect conditions referable to health and nutritional status in economically disadvantaged populations requires that educational research conducted in these groups give more sensitive attention to problems and relationships in this area [p. E-1]."

Research indicates that the prevalence of many health problems is related to socioeconomic status and that these health-related conditions have important implications for school and general social adjustment. The studies by Pasamanick and Knobloch (1958) of the relationship between health status and school adjustment in low-income black children; by Lashof (undated) on health status and services in Chicago's southside; by Porter (1965) on the health status of a sample drawn from the Head Start population; and by Cravioto, DeLicardie, and Birch (1966) of health and nutrition's relation to child development in a South American population, provide evidence supporting the hypothesis that incidence of developmental defect is greatest where medical, nutritional, and child care are poorest. Although the research evidence does not support direct links between physical status and learning except in extreme cases, the data do suggest an interaction between various health conditions and social class, such that the cumulative effects may show significant, although indirect, links to learning.

Through the multivariate design of this study, it is hoped that we may come to better understand the relationships between physical function, health, and nutritional status on the one hand and the affective and cognitive development of the young child on the other.

Procedure

Following completion of the testing cycle, physical examinations were scheduled for all study children, and transportation was provided to the physician's office. During this visit, the Child Health Record was completed on the basis of the doctor's examination and information provided by the mother or mother surrogate to the doctor or one of his office staff.

The information obtained is admittedly very limited in extent and interpretability, owing to difficulties in the understanding, memory, and knowledge of the respondents; to the necessity for relatively brief individual appointments; and to the fact that the administration of some of the measures employed must be considered only crudely standardized. As the Health Record indicates, a comprehensive medical examination was not given, but attention focused on those physical status variables considered relevant to intellectual or social development.

Results (See Vol. 2, Tables 1-19)

Given the limitations of the data, the following results must be interpreted with caution.

For the combined sample, a relatively small proportion of problems was reported, and few significant differences from general norms were apparent.

(See the sample Child Health Record in Appendix B for the extent of information obtained.) There were exceptions to this general finding in four areas--screening of vision and hearing, incidence of hospitalizations, indices of possible neurological involvement, and history of immunization. Of the children examined, 22% were reported to be in the abnormal range for near and far vision, and 20% were reported to have abnormal auditory acuity. Although most screening tests used need much greater definition in terms of reliability and validity, these data are significantly different from the reported incidence in the general population. North (1969), for example, reported that approximately 8%-10% of preschool children may be expected to fail vision screening tests. We cannot assume, however, that abnormal screening-test results are diagnostic of disease or handicap. The degree of abnormality may be mild; many children when retested might test in the normal range; and, given the difficulties in testing young disadvantaged children, these findings might reflect difficulties in the child's understanding of the response expected of him in the screening test.

In regard to previous medical history, 30% of the sample were reported to have been hospitalized because of illness or accident. This may reflect the susceptibility of low-income families to infections, chronic diseases, and delayed treatment of illness, in addition to traumatic events associated with crowded housing, poor living conditions, and the high risk of accidents in urban ghettos--especially for the relatively unprotected preschool child. For those children with multiple hospitalizations, the accumulated effect of time lost from customary activities, of fatiguing convalescence, and of the emotional trauma of separation from family may be considerable.

Although no abnormal findings were reported in the physician's neurological examination, this index was at best crude: it could have detected only marked abnormalities. However, 16% of the sample did show three or more "soft" neurological signs of "minimal damage," although it is uncertain to what extent these might reflect actual organic tissue damage rather than functional problems related to other aspects of development. Moreover, certain signs (e.g., convulsions) may be more predictive than those more dependent on subjective reactions (e.g., rating of clumsiness).

Given the general finding that a greater proportion of children from low-income families are born prematurely and have more post-natal difficulties, it is not surprising that 6% of the present sample were reported to have been delivered four or more weeks prematurely, with 8 1/2% suffering complications at birth, and 9% of the mothers reporting an abnormal delivery. The accuracy of these data, however, must be checked with hospital records before further interpretation can be made. It should also be noted that for a number of the subjects these data are missing since the children live in foster homes. Our percentages, therefore, may actually be depressed since it is just such children who are more likely to have experienced poorer prenatal, birth, and postnatal care.

Preventive health care is usually found to be less prevalent among lower socioeconomic families. Although this neglect is often attributed to the families' apathy and/or distrust of societal institutions, it also could be justifiably attributed to problems families encounter because of inadequate communication and understanding on the part of those providing the services. As suggested by Watts (1966), the attitude toward health care of parents of low socioeconomic status appears similar to that of more advantaged persons, but their participation is lower because often other needs are of higher priority, and the services offered are inaccessible, expensive, and humiliating. In the present sample, 66%, 63%, 61%, and 72% of those children examined were reported to have received immunization, respectively, for polio, smallpox, measles, and DPT; 80%-90% would be typical comparative figures for a middle-class sample. Even these lower percentages are probably inflated because mothers are more likely to have answered "Yes" to these questions; also, some of the children were examined several months after the testing and, therefore, might have received immunizations through a Head Start or other preschool program.

Site differences: Given differences in method of data collection, in size of samples (95 in St. Louis, 260 in Trenton, and 400 in Portland), and in the nature of the samples which varied across sites, the obtained between-site differences are not readily interpretable. It is also not known at this time the extent to which those who were examined in a particular site differed from those who were not. Thus, the following findings raise questions that need to be further explored.

Mothers in St. Louis reported about their children a higher percentage of premature births, delivery complications, newborn illnesses, hospitalizations, and present bedwettings; they were also more likely to judge their sample child as difficult and slow in development. For example, 44% (vs. 30% for Portland and 3% for Trenton) judged their child to be hyperactive and 21% (vs. 12% and 1%, respectively) judged their child to be clumsy. The congruence of these findings suggests the need to explore whether developmental defects might be influencing performance, particularly on the various perceptual-motor tasks included in the study. If, as the interview data would suggest, our St. Louis sample is the most disadvantaged, this greater reported frequency of early stresses on the child reflects the pervasive physical and emotional consequences suffered by those living under deprived conditions. . .

Significantly more abnormalities of vision and hearing were reported in Trenton than in Portland (29% vs. 0%; and 20% vs. 0%, respectively), but if we take into account the cautions suggested earlier in connection with the screening tests and probable differences in physicians' methods, it is difficult to interpret the problem. Since most children in St. Louis were not given these screening tests, comparisons with that site are not possible.

A small but significant difference across sites was found in the physicians' reports of abnormalities in behavior during the physical examination (14% in Portland vs. 3% to 4% in Trenton and St. Louis), but such results are additionally confounded by differences in physicians' sensitivity to such behavior and in physicians' judgmental frames of reference.

One of the largest site differences was in the percentage of children immunized, with Trenton being consistently and significantly highest (usually by at least 20 percentage points) and St. Louis lowest. Assuming accuracy of the data, one still does not know the extent to which this finding reflects differences in availability of community resources or differences in parental behavior. In any case, the evidence suggests the continuing greater susceptibility of our study children in St. Louis to physical and physiological stress.

Present height and weight data appear similar across sites; but since both are dependent upon age, and age is confounded with site, the data suggest smaller gains with age in St. Louis. Since there is a fairly wide age distribution for the Health Record, height and weight data are reported in Volume 2 by three-month age intervals. For the preschool child, age comparisons are more appropriate than reporting according to a Wetzel Grid.

Another index of present nutritional status is the hemoglobin count. As with deviations from norms in height and weight, low values are not necessarily diagnostic of malnutrition, but they do suggest iron deficiency. The average expected value for this age is between 12-15 (Silver, Kempe, & Bruyn, 1967); the combined average obtained was 11.8. Mean values obtained across sites were 10.6, 11.9, and 12.5 for Trenton, St. Louis, and Portland, respectively. Moreover, 21% of the children in Trenton obtained hemoglobin values of 10.2 or less vs. 2% and 5% in Portland and St. Louis, respectively. The low hemoglobin concentration associated with iron-deficiency anemia is a frequent finding in poor infants and preschool children. Although it is not known at what level growth, disease resistance, or learning ability are actually impaired, iron-deficiency anemia may be a useful index of other nutritional deficiencies. Moreover, as Birch (1969) pointed out, anemia in a preschool child may be important not because a low hemoglobin level affects his current health, but because it is an indicator of exposure to antecedent conditions of risk.

Sex differences: Except for present weight, sex differences in physical status or health were negligible. There were small but consistent sex differences, however, in mothers' reporting of problems. A higher percentage of boys than girls were reported as slow on each developmental characteristic, particularly with respect to talking (16% vs. 8%). For the indices of possible neurological involvement, 20% of the boys, as contrasted with 10% of the girls, had three or more positive signs. The report that boys have been hospitalized more (34% vs. 25%) and represent more cases of present bedwetting (17% vs. 8%) suggests greater experiential stress, either organically or functionally determined.

Race differences: Consistent with research findings, black children in our sample displayed a higher incidence of health and health-related problems. Birth weight was significantly lower than whites' (109 vs. 117 ounces), present weight by age was lower, hemoglobin values were significantly lower (11.6 vs. 12.3, with 10% vs. 4% having hemoglobin values of 10.2 or below), and immunizations were less prevalent. But as North (1969) and others have pointed out, black-white differences, so frequently noted in this country, are presumably associated with socioeconomic status, rather than with race per se.

Preschool attendance: Differences according to later preschool attendance were few. Those that did occur suggest differences in the social class composition of these groups and the more favorable developmental history of those children who were to attend a preschool program other than Head Start. Mothers in the "Other" preschool group reported fewer birth complications, higher birth weight, a smaller percentage of children showing retarded development, and a significantly higher percentage of completed immunizations. It is not known, however, to what extent these findings are confounded by the fact that a higher percentage of study children in the preschool group were first-borns. More behavioral problems were re.)orted for those children who were to attend Head Start, their mothers more often described them as clumsy and hyperactive, and the physicians noted more behavioral abnormalities during the physical examination.

Discussion

The findings are, at best, only suggestive of relationships with the child's cognitive and social-emotional development. As pointed out earlier, present physical and nutritional status may have little direct relationship to learning; for example, present research data argue against a cause-effect relationship between malnutrition and learning unless malnutrition is severe and occurs during prenatal or early infancy periods. Similarly, the ganism has a high degree of tolerance to iron deficiency. The deficiency must be great before it is reflected in impaired intellectual functioning.

These indices, however, are important for what they may say about the child's past and future experiences. The child below average in height and/or weight may be reflecting a history of deprivation, whether in terms of nutritional deficiencies or emotional factors interfering with his subsequent growth. These early deprivations may have serious consequences for later development. Moreover, they may be directly related to the child's subsequent energy level and his susceptibility to infection, both of which contribute to poorer school attendance. In a recent article, Birch (1969) reported on an earlier study he had conducted on reading ability in relation to amount of instruction. For bright and superior children, no relationship was found; for those with reading difficulties, the relationship was exaggerated. Thus, given the composition of our sample, the children's school attendance becomes a critical determinant of academic achievement, as repeated absences may represent an additional handicap to the one already presented by their deprived opportunities. Physical status and health variables, therefore, become important indirect links to learning.

Recognizing the shortcomings of much of the health data obtained up to this point, our effort will be directed in future study years to obtaining more standardized and accurate information. Hospital records will be obtained wherever possible to check birth history data and to collect Apgar scores, and school health records will be used in accordance with the advice of pediatric consultants.

Future analyses, it is hoped, will do more than affirm that prevalence of health problems is related to socioeconomic status; they should also suggest the mechanisms by which this relationship is mediated. For example, we hope to understand better the complex interaction between social class and antecedent conditions of risk such as prematurity and low birth weight; these antecedents have been found predictive of later school achievement for lower socioeconomic families, but not for upper socioeconomic families.

Identification of health problems, however, is not sufficient; an essential next step is to ascertain whether anything is being done about them. Did those children with abnormal vision and hearing, with below average hemoglobin values, and other abnormal screening results receive any follow-up care? Were these findings confirmed for those children who later attended Head Start or another preschool program, and, if so, were the children treated? Equally important, has the family been helped to establish a regular liaison with medical facilities, becoming aware of and using various medical resources? We hope to be able, also, to determine from kindergarten records whether children equally eligible for Head Start, but who did not enroll in Head Start, had greater or lesser health needs and to determine their current use of health services.

Section C

Academic Skills

ETS Enumeration I

General Description of Measure

This task was intended to assess the child's abilities to itemize, without the requirement of counting or reciting the names of numerals. In a general way, the ability to attend systematically to each component of an array can be considered a prerequisite for the later understanding and use of number. Piaget (1952) examined aspects of this problem in his analysis of intuitive responses of young children to problems in one-to-one correspondence. Potter and Levy (1968), drawing in part upon the literature of perception of number, suggested techniques which form the basis of the present method. One purpose of the task is to assess what are felt to be important capabilities, using procedures which simplify as much as possible the requirements on the child for understanding the nature of the task and the mode of response. The measure was intended to serve as a companion measure to (a) the more complex Piagetian tests of Spontaneous Correspondence and (b) the more traditional tests of counting.

Task Procedure

The child is asked to point once, and once only, to each figure on a test booklet page. No verbal response is requested. The figures, consisting of colored circles, are arranged into three types of arrays: single line, double rows, random. The number of figures in an array varies from 6 to 7 to 9. There is a total of 12 items in the test. Following these items the child is asked to count aloud a set of seven figures and the tester records exactly what the child says and notes whether he has pointed to the figures.

Results (See Vol. 2, Tables 183-198)

Items were scored as correct if the child pointed to each figure in the item once and only once. Total scores were well distributed across the possible range of 0 to 12 with mean and 50th percentile coinciding almost precisely with the midpoint of 6, and the 25th and 75th percentiles were located evenly at scores of 3.07 and 9.05, respectively (Vol. 2, Table 190 or Table 186). More than 90% of the subjects passed at least one of the twelve items, which indicates that most of the subjects responded with some comprehension of the nature of the task.

Validity: Evidence related to the validity of the measure is limited, at present, to two important sources. (1) Analysis of performance as a function of the type of array of the item shows item difficulty to be occurring in the expected directions. Mean score on the six items which contained a smaller number of figures was 3.7 (Table 4-4), with 26.5% of the subjects passing all six of these items. By contrast, mean score on the six items which contained nine figures was 2.3 (Table 4-4) with only 9.2% of the subjects passing all six of these items. Items also were varied in the configuration of arrays. The effects of configuration can be summarized as follows: the percentages passing all four of the straight-line items, the double-row items, and the random items, were 29.6, 21.9, and 12.2, respectively (these findings, expressed in mean scores for item groups, are shown in Table 4-4). In summary, accuracy of itemization behavior was found to be related to the number of figures to be itemized and the arrangement of those figures. The pattern of these findings was reproduced in each of the three sites and conformed to a theoretical analysis of what the test was supposed to be measuring.

(2) Age data are a second source of information for interpreting the appropriateness of the measure. This is particularly important inasmuch as it is assumed that the abilities being measured are ones undergoing rather rapid change in the age period investigated. Piaget's analysis and the few previous studies done with such an instrument would indicate that, from the period of about 2 1/2 to 6 years, one would expect that the task would move from the status of being quite difficult to being quite unchallenging. In the present data, although there is a steady rise in mean score from 4.5 for the youngest group to 6.7 for the oldest, it is clear that the task continued to pose a challenge throughout the age range with some uncertain evidence of leveling off in the older groups (Vol. 2, Table 186). The task has been included, in reduced form, in the battery for the following year. It should be noted that the pattern of item difficulty, described in the preceding paragraph, is repeated for each of the six age groups.

Table 4-4

Means and Standard Deviations on Subgroups of Enumeration Items for Three Sites

Item Groups

Site	1 - 6 (six fig.)		7 - 12 (nine fig.)		1,2,7,8 (line)		3,4,9,10 (rows)		5,6,11,12 (random)		1 - 12 (all)	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.	M	S.D.	M	S.D.
Trenton	3.52	(2.01)	2.21	(2.12)	2.27	(1.43)	1.87	(1.49)	1.57	(1.45)	5.80	(3.84)
Portland	3.96	(1.99)	2.45	(2.00)	2.54	(1.35)	2.17	(1.45)	1.71	(1.36)	6.43	(3.62)
St. Louis	3.64	(1.88)	2.01	(1.80)	2.35	(1.36)	1.89	(1.42)	1.40	(1.17)	5.71	(3.28)
Combined	3.75	(1.98)	2.28	(2.01)	2.41	(1.38)	2.01	(1.46)	1.60	(1.36)	6.08	(3.64)

Sex: Data in Volume 2, Table 190 suggest that girls as a group may perform somewhat more accurately on the task than the boys. Since the task requires coordinated, sustained attention, it may be found that the difference is more attributable to this factor than to any basic difference in understanding of quantity. Future analysis of performance on Spontaneous Correspondence (which does not demand this sort of attention) should provide evidence on this question.

School attendance: Marginals which compare groups by categories of later school attendance indicate that the children designated "Head Start" may, as a group, be attaining slightly lower scores than the other two groups. Data on such comparisons cannot be interpreted in a useful way at this time. Account would need to be taken of the social class background of the groups and other possible confounding factors. In addition, the meaning of a relatively good or a relatively poor performance on enumeration can only be determined when performance on this task is placed in the context (discussed below) of other measures of quantitative thinking.

Counting (Item 13): Tables 191 through 198 (Vol. 2) report data on the one counting item (Item 13) administered at the conclusion of enumeration. A more extensive test of counting was included in the second year of testing. Item 13 protocols were coded, independently, in two different ways: (a) 41% of the subjects were able to enumerate correctly to the extent of reciting seven number names (although not necessarily the correct sequence); (b) 52% of the subjects were able to recite a correct sequence (although not necessarily of the correct length). The 30% of the subjects, coded "1" (Vol. 2, Table 194 or 198), are those subjects who were correct in both these senses. Such data suggest that for children of this age period, their ability to recite sequences of numbers, when they are asked to count, and their understanding of the correspondence of number names to objects, are to some extent independent of each other.

Discussion

These first data on Enumeration suggest that the test is serving its intended purpose of constituting a simple measure of spatial enumeration sensitive to differences within the age period. A preliminary analysis of reliability has been done on a randomly selected sample of 100 from the Portland site. A K-R 20 of .86 indicates that the internal consistency of the test is good.

The task was developed for the study to constitute one of three types of measures to be used in investigating the development of quantitative thinking in the first years of the study. The other measures are traditional counting tests and adaptation of Piaget's tests of correspondence and, eventually, conservation of number. In line with Kohlberg's (1968) analysis, it was intended that, among several differences, these tests would vary on the dimension of their sensitivity to effects of specific instructional experiences. That is, Piagetian tasks are assumed by Kohlberg to be (and have been demonstrated to be) relatively insensitive to specific teaching episodes and reflect instead a broader, longer, more complex series of organism/environment interaction. Counting tests, on the other hand, have been demonstrated to be more sensitive to specific experience (e.g., instruction from parent, teacher, TV). The enumeration task was intended to fall somewhere between the two on such a postulated dimension. (Preliminary analysis of a sample of 100 shows correspondence and counting to be unrelated, whereas enumeration is positively correlated with both.) The intention is to try to maintain such diversity in assessing quantitative thinking during the course of the first several years of the study, with the hope of obtaining a broad picture of where the children begin and of later development as it relates to variables of the study.

ETS Matched Pictures Language Comprehension Task

When do children begin to comprehend small functor words and inflections that govern syntax and the logical meaning of language as it is understood by mature speakers? Is the child from a restricted environment retarded in developing such comprehension, as Bernstein (1961), Bereiter and Engelmann (1966), and Osborn (1968) suggest? Or is even a minimal language environment sufficient for a child to develop the grammatical rules of adult language, as many linguists (e.g., Lenneberg, 1967; Weksel, 1965) suggest? What _is_ the developmental pattern of syntactic comprehension, and what is its relationship to family, ethnic, and school factors? These are some of the developmental and educational issues which were explored using the Matched Pictures Language Comprehension Task.

Scoring procedures were also designed to obtain data of more purely theoretical interest. Although linguists and psycholinguists have convincingly argued that language learning is predominantly rule learning rather than associative learning, their case is based largely on the grounds of (1) logic and (2) data regarding systematic errors in spontaneous speech samples of a relatively small number of children. In this study, behavioral evidence of a different nature was obtained relevant to the "rule-versus-associative-learning" question.

Task Description

The ETS Matched Pictures Task (a measure using Roger Brown and Jean Berko Gleason's "matched pictures" technique) consists of 20 cards containing pairs of pictures. Both pictures in a pair contain identical stimulus elements, but these elements are arranged differently. The child's job is to distinguish which relationship a stimulus word implies and point to the corresponding picture. For example, the child is shown a pair of pictures and told only that they are called "Bear is sitting" and "Bear is not sitting." He is then asked to point to the picture called "Bear is not sitting." There are two "warm-up" items at the beginning of the task to ensure that the child understands his task. (This task has practically never been stopped because a child failed to understand the response procedure.) The 20 picture pairs (items) are divided into four subtests, with a counterbalanced design for the position of the "correct" picture (right or left side of the card) and the sequence in which the examiner names the "correct" picture title (first or second). The items of the four subtests are given below, with the "correct" picture designated by an asterisk.

Future Tense (4 items)	Item # in the Test
*The cat will drink. The cat is drinking.	1
The cup is falling. *The cup will fall.	3
Mrs. Mouse is sweeping. *Mrs. Mouse will sweep.	5
The dog is eating. *The dog will eat.	7
Past Tense (4 items)	
*The frog jumped. The frog is jumping.	2
The match is burning. *The match burned.	4
*The dog swam. The dog is swimming.	6
*The cat ran. The cat is running.	8

<u>Negation (6 items)</u>

*The mouse is not reading. The mouse is reading.	9
*The bear is not sitting. The bear is sitting.	10
The dog with a bone; *the dog with no bone	11
The cake with the candles; *the cake with no candles	12
*The cat is not smiling. The cat is smiling.	13
The basket is empty. *The basket is not empty.	14

<u>Prepositions (6 items)</u> The procedure was changed slightly here, in that the child was not told the names of both pictures, but was asked only to point to the one named by the examiner. The picture called for in each item is given below (with the contrasting preposition depicted in the paired picture indicated in parentheses).

The cat under the chair (on the chair)	15
The bird in the cage (out of the cage)	16
The rabbit behind the tree (in front of the tree)	17
The ball on the table (under the table)	18
The dog beside the box (in the box)	19
The stick between the monkey's feet (under...feet)	20

Each item on the task is scored either right or wrong (1-0) and the task as a whole yields six scores: the four subtest scores which are of major interest, a Total Tense score, and a Total Score. An Uncertainty score was also derived from administration of the task in this study. That is, the examiners used a series of standard codes to indicate specific kinds of behavior exhibited in responses to any item in every test administered. Examples of these codes are <u>NA</u> (no answer); <u>R</u> (examiner repeated question); <u>DK</u> (child says, "I don't know."); etc. The specific codes involved in the Uncertainty score, as well as the directions given to examiners when such behaviors occurred, are given below:

MA ....Giving more than one answer. (May be verbal or nonverbal--e.g., pointing at different response choices.) Ask child which is the best answer and circle that response.

BF ....Pointing back and forth at response choices. Encourage child to pick the one he thinks is the best answer. Note: This differs from MA in that the child never actually touches a response choice but rather hovers over them and fluctuates back and forth.

EA ....Early answer. Child gives answer (points to picture, etc.) before tester asks question. Say WAIT, then repeat instructions in full.

The Uncertainty score for Matched Pictures was calculated by summing the number of items for which any of these three codes was indicated. Thus, the possible range of the Uncertainty score for any given child is 0-20.

Experimental history of the task: Matched Pictures has been used (either in identical or modified form) in three other research projects. An identical form of the task was most recently administered (spring, 1970) to a group of black migrant workers' children in Florida as part of a larger Migrant Project sponsored by Florida State University, and undertaken by Mr. Donald Shontz for his doctoral dissertation. Permission to use Matched Pictures in the Florida migrant research project was granted by the Longitudinal Study. The task was administered to 204 black children ranging in age from 3 years 10 months to 5 years 4 months, with the majority (86%) being within the 4-year-old age range. Although Mr. Shontz did not include any response codes from which to calculate an Uncertainty score, his data do include the six subscores derived from the test itself.

In the summer of 1969, the author administered Matched Pictures along with other measures in a small pilot research project. The test was identical to that used in the Longitudinal Study except that the Prepositions subtest was omitted. The task was administered to 67 children attending summer Head Start programs in Mercer County, New Jersey (except in the city of Trenton). Because precise age was not a critical variable, these data were not obtained, but most of the children were within the 5-year-old age range.

ETS Matched Pictures (in a modified form of the present version) was originally developed for use in a 1967 study, supported by Carnegie Corporation funds, of preschool and kindergarten children in New York City. This task and seven other experimental measures were administered during the period January to March to a cross-sectional sample of children representing selected age groups and both middle and low socioeconomic levels. The age groupings were at three-month intervals and ranged from 4 years 3 months, 4 years 6 months, etc., to 6 years of age. The sample was drawn from four public schools and two private nursery schools. It should be noted that in this study, as in so many others, the variable of race was almost completely confounded with the variable of socioeconomic level.

Results and Discussion (See Vol. 2, Tables 199-254)

The Longitudinal Study yields both the largest and youngest sample to which ETS Matched Pictures has yet been administered. While the entire age span ranges from 3 years 6 months (3.6) to 4 years 11 months (4.11), the majority of children in the sample are between the ages 3.9 and 4.8. Table 4-5 presents an overview of the results in the form of mean scores for the total number of children tested at each site separately and for the three-site composite.

The data in Table 4-5 serve to highlight two findings that corroborate results obtained from other administrations of the Matched Pictures task. First is the obvious and striking consistency of mean results from site to site. This consistency also holds for standard deviations and ranges, as

Table 4-5

Mean Scores on Seven Subtests for Each of

Three Sites and Composite Sample

Subtest	Number of Items	Trenton (N=322)	Portland (N=458)	St. Louis (N=203)	Composite (N=983)
Future Tense	4	1.74	1.91	1.70	1.81
Past Tense	4	1.68	1.54	1.69	1.62
Total Tense	8	3.42	3.45	3.38	3.43
Negation	6	4.23	4.69	4.32	4.46
Prepositions	6	4.52	4.81	4.60	4.67
Total Score	20	12.17	12.97	12.30	12.56
Uncertainty	20	0.89	1.25	0.95	1.07

can be seen from Tables 199 through 254 in Volume 2 of this report. If one considers these data as representing three replications of the task, it appears that geographic variation (with its concomitant effect on sample characteristics) has little influence on the developmental pattern of comprehension defined by this particular task. A second finding evident from Table 4-5 is that the subtests of verb inflection (future and past tense) are by far the most difficult and indicate an area of greatest potential growth.

These two findings will be elaborated upon in some of the following discussions. Although Total Tense Score and Total Score are included in Table 4-5 for the sake of completeness, it makes sense only to discuss major results obtained from each of the subtests. Relevant data obtained from other administrations of the task are also discussed where appropriate.

Uncertainty: The decision to include an uncertainty index was based on observations made during the first administration of Matched Pictures* to New York City children in 1967. As mentioned previously, the 1967 version of the task was not identical to the present version--although the picture stimuli for future and past tense subtests were identical. The difference between the two administrations and the observations made regarding uncertainty are summarized in an ETS Research Memorandum describing results of the New York City study (Melton et al., 1968).

> Table 6-6 shows percentage of correct responses on each LCT item. Interpretation of this task is somewhat muddied because of the large chance element that enters into the response. Since a child must point to one of two pictures, he obviously has a 50% chance of being right....Actual interpretation of "chance" behavior, however, must be made with extreme caution. (p. 95)
>
> * * *
>
> The first two LCT subtests (for Future and Past Tense) are most interesting and illustrate this need for caution. In each of these items, a present progressive picture title was paired with either a future or past tense title (e.g., "Cat <u>is drinking</u>" and "<u>Cat will drink</u>"; "The dog <u>swam</u>" and "The dog <u>is swimming</u>" etc.). Half of the time the child was asked to point to the present tense picture and the other half to a future or past tense picture. The results clearly show that the progressive tense is under better control than other tenses, with virtually all the children understanding it....
>
> What of the chance element here? As can be seen, all of the future and past tense items are responded to at a chance level by the lower class children, as is the irregular past tense by middle class children. For the most part, however, their behavior did not appear to be that of random guessing--they did not squirm, search the examiner's face for clues, switch back and forth between pictures, or otherwise appear undecided.

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*The test at that time was entitled the Language Comprehension Task (LCT).

> The interpretation made here is again one of substituting a known quantity for an unknown one in a systematic fashion. They seem to assimilate, if you will, all tense inflections to the here-and-now progressive verb form. (p. 97)

At the time, these comments were merely impressions about the consistent and orderly mistakes made by children. No systematic behavioral observations had been obtained. These impressions, however, were tentatively interpreted along linguistic theoretical lines--i.e., that children's grammatical errors appear to be governed by rules and not by guessing strategies or individual coping styles. The systematic observational data gathered in the Longitudinal Study and reflected in the Uncertainty score would seem to lend substantial confirmation to such an interpretation. Aside from the extremely low means for the Uncertainty score, closer inspection of Tables 250 and 254 (Vol. 2) reveal other interesting facts. First, this is the only subtest in Matched Pictures for which the maximum possible score (20) was not obtained. The highest obtained score was 13; and this occurred with only a very small number of children in the two lowest age groups. Further, and in accordance with linguistic notions of the universality of cognitive mechanisms underlying syntactic rule acquisition, the data reveal no noticeable mean differences between children on the basis of sex, race, or preschool attendance. Even the variable of age shows only slightly over 1 score point in mean difference between the oldest and youngest groups--and this is the largest mean difference of all the major variables.

As previously mentioned, the theoretical argument against "associative learning" (e.g., as espoused by Skinner, 1957) in language development is based largely on the logic of linguistic analysis (e.g., Chomsky, 1965) or on data obtained from the spontaneous speech productions of a relatively small sample of children (Brown & Bellugi, 1964; Cazden, 1968; Miller & Ervin, 1964). While errors of both omission and commission have been studied in productive speech, it is the errors of commission which have provided the most convincing evidence that children do internalize grammatical rules and then systematically overgeneralize them. The Longitudinal Study data constitute the largest (if not the first) set of experimental evidence relating to systematic errors of commission in children's language comprehension, and it is the child's understanding of language which appears more relevant to an estimation of his underlying language capacities or competence than is his actual language production (Lenneberg, 1967). As is widely recognized, what a child actually says may be influenced by innumerable factors other than language competence.

In summary, the Uncertainty score data tend to confirm the theory that children learn to understand and produce sentences in their native language by learning grammatical rules, overgeneralizing these rules, and then progressively differentiating them. When faced with the task of pointing to a past or future tense picture, the children made many errors--but they were errors of pointing confidently to the present-progressive tense picture. Analysis of the verb inflections produced by Adam, Eve, and Sarah (subjects in a study at Harvard of language acquisition) shows that the present-progressive inflection appeared first in the speech of all three children and had reached criterion (90% correct productions) by age 3 (Cazden, 1968). With few exceptions, it appears that the present-progressive tense was also well under control for subjects in the Longitudinal Study, and that errors of overgeneralizing rules are made with equal consistency in language comprehension tasks as well as in language production.

Prepositions: Table 4-6 reveals that the 6-item Preposition subtest has the lowest ceiling of all, with mean scores of 4.52 for Trenton, 4.60 for St. Louis, and 4.81 for Portland. This trend is verified in what might be considered the "most disadvantaged" sample of those studied so far--i.e., the 204 black children of Florida migrant workers. With only a slightly higher age distribution than represented by the Longitudinal Study, Shontz obtained a mean score of 4.84 for the Prepositions subtest. Item difficulties for the 6 prepositions (in terms of percent correct) range from a low of 61.5% for "beside" to 92.9% for "under." With respect to the major variables of the study, there is not as much as 1 point mean difference between any groups at any site. The combined three-site totals for these variables are given in Table 4-6.

Table 4-6

Mean Group Differences on the Preposition

Subtest for the Composite Sample

Major Classification Variables	N	Mean	S.D.	Range
Male	503	4.60	1.24	0 - 6
Female	474	4.75	1.21	0 - 6
White	274	5.03	1.11	1 - 6
Black	703	4.53	1.25	0 - 6
42-44 months	54	4.52	1.30	0 - 6
45-47 months	206	4.55	1.38	0 - 6
48-50 months	233	4.59	1.28	0 - 6
51-53 months	266	4.69	1.17	1 - 6
54-56 months	185	4.89	1.08	2 - 6
57-59 months	33	4.82	.98	2 - 6
Head Start	371	4.53	1.23	0 - 6
Other	533	4.75	1.23	0 - 6
Preschool	73	4.84	1.25	1 - 6

Because of the ease of this subtest and lack of group differences, the decision was made to omit it in the 1970 administration of Matched Pictures and to substitute a 6-item subtest of comparative adjectives (more-less; same-different) and coordinated descriptives ("less but bigger").

In considering the Preposition subtest data, it is interesting to note what Osborn (1968) has written under the heading "The Language of a Disadvantaged 4-Year-Old":

> He does not understand many of the common prepositions and conjunctions. For example, over half of the children missed an item requiring them to point to an object next to a given object; fewer than half could handle a between task correctly. ... (p. 38)

Granting that her method of testing was slightly different from that represented by Matched Pictures (pointing to an object rather than to one of two pictures), one is nevertheless surprised to find such a large discrepancy between her reported results and those in the Longitudinal Study (e.g., "between" was handled correctly by 68.4% of our subjects). This discrepancy seems particularly noteworthy in view of the fact that the majority of the Longitudinal Study sample are slightly younger (i.e., between the ages 3.9 and 4.8) than the children Osborn describes. These differences in results will be explored further in our spring 1971 report.

Negations: Essential competence in understanding negation has been demonstrated by all the samples of children to whom this subtest was administered. If one considers the cross-sectional samples of the 1967 study as four replications and the individual sites of the Longitudinal Study as three replications, then Matched Pictures Negation has been administered (in part or whole) to nine separate samples. The consistency of mean results obtained is illustrated in Table 4-7. The first five samples listed received an identical form of the

6-item test. The last four samples, from the 1967 research project, received a 2-item test consisting of the verb negations (bear not sitting; mouse not reading).

The data for standard deviations and ranges (available for all but the Summer 1969 study of Head Start children) show a consistency from sample to sample equal to that of the mean scores. Concerning the major Longitudinal Study classification variables, differences between groups on the Negation subtest are of about the same magnitude and in the same direction as the data presented in Table 4-7. It should also be noted that no differences of any consequence were obtained between low and middle SES children in the 1967 study.

Table 4-7

Mean Scores on the Negation Subtest in Nine Samples

Sample Description	Date Administered	Sample Age	N	Mean Score
Trenton (Long. Study)	Spr.-Sum. 1969	3.6 - 4.11	323	4.23
Portland (Long. Study)	Spr.-Sum. 1969	3.6 - 4.11	453	4.69
St. Louis (Long. Study)	Spr.-Sum. 1969	3.6 - 4.11	201	4.32
Florida: Black Migrant Project	Spring 1970	3.10 - 5.4	204	4.22
Head Start Children in Mercer County, N. J.	Summer 1969	5-year-olds	67	5.21
NYC Children: Low SES	Winter 1967	4.3 - 5.0	41	1.80
NYC Children: Middle SES	Winter 1967	4.3 - 5.0	39	1.95
NYC Children: Low SES	Winter 1967	5.3 - 6.0	49	1.98
NYC Children: Middle SES	Winter 1967	5.3 - 6.0	63	1.97

It is in connection with the Negations subtest that the greatest discrepancy exists between results reported here and those reported by Bereiter and Engelmann (1966, p. 35) and by Osborn (1968). Again, in describing "The Language of a Disadvantaged 4-Year-Old," Osborn states:

> He does not understand the function of not in a sentence. An example: A child is presented with three objects and is asked to point to the cup, the spoon, and the block. He does this and is then asked to point to "something that is not a cup." He points to the cup. Another example: The teacher points to a group of blocks and holds up one. "This block is red. Can you find a block that is not red?" The child points to another red block. (p. 37)

In the 1967 New York City study, a language task was used which differed from Matched Pictures in response mode, while overlapping it in some item types (e.g., negation). In this test, the Verbal Instructions Task (VIT), children had to manipulate objects to indicate their understanding. To test negation, for example, the child was given such instructions as: "Hand me a car, but not this one"--the examiner pointing to one of two toy cars. As can be seen, the visual cue given by the examiner (pointing to one of the cars) would lead the child to make an incorrect response unless he had a specific understanding of "not" well generalized. Results for the 4-item negation subtest included in the VIT were as follows:

	Low SES 4.3-5.0 (N=42)	Middle SES 4.3-5.0 (N=39)	Low SES 5.3-6.0 (N=49)	Middle SES 5.3-6.0 (N=63)
Mean	3.33	3.79	3.63	3.86
S.D.	.68	.46	.56	.35
Range	1-4	2-4	2-4	2-4

The research conducted with Mercer County Head Start children during the summer of 1969 was designed in part to investigate the discrepancy between the New York City data and the Bereiter-Engelmann-Osborn claims. Not only was Matched Pictures Negation administered to the children in this study, but also an Object Negations test. The Object Negations test consisted of 7 items: the 4 items previously included in the VIT; the "colored block" item described by Osborn above (except that yellow blocks were used instead of red blocks); and two versions of the "cup-spoon-block" item also described above. In one version, the examiner's last instruction was "Point to something that is not the cup"; and in the other version, "Point to something that is not a cup." As indicated in Table 4-7, the mean score obtained in this study on the 6-item Matched Pictures Negation was 5.21. The mean score obtained on the 7-item Object Negation test was 6.31.

To investigate further whether disadvantaged children understand the function of "not," the decision was made to keep Negation as a subtest of Matched Pictures in the 1970 administration--despite its relatively low ceiling. Inclusion of negation items requiring object manipulation as a response mode is also being contemplated for future test administrations in the Longitudinal Study.

Verb inflections: Clearly, neither the future nor past tense inflections are under very good control by Longitudinal Study subjects at the time of their first testing. Consistency of results is again the rule: mean scores obtained from the Florida migrant sample and the Mercer County Head Start sample are quite similar to the means for each of the three sites presented in Table 4-7. In fact there are even smaller differences than obtained on other subtests between groups representing the major study variables. This striking consistency of performance between groups is indicated in Table 4-8.

Table 4-8

Mean Group Differences on Future and Past Tense

Subtests for the Composite Sample

	Future Tense			Past Tense		
Major Classification Variables	N	Mean	S.D.	N	Mean	S.D.
Male	507	1.80	1.10	506	1.57	1.05
Female	476	1.82	1.18	473	1.67	0.97
White	274	2.04	1.17	272	1.64	1.04
Black	709	1.72	1.12	707	1.61	1.00
42-44 months	54	1.54	1.02	52	1.56	1.09
45-47 months	207	1.86	1.11	207	1.65	0.98
48-50 months	236	1.82	1.12	235	1.67	1.07
51-53 months	267	1.87	1.23	266	1.55	1.00
54-56 months	186	1.70	1.10	186	1.65	0.96
57-59 months	33	1.97	1.10	33	1.58	1.06
Head Start	374	1.77	1.11	372	1.65	1.00
Other	536	1.83	1.16	534	1.61	1.00
Preschool	73	1.84	1.19	73	1.58	1.18

It is evident from Table 4-8 that there is a very small but consistent difference between future- and past-tense performance, with future-tense means being slightly higher. Although the difference is so small as hardly to deserve attention, it is a difference that has also been found in every other sample of children taking Matched Pictures. Tentative interpretation of this minute but consistent difference rests on the fact that the future-tense items are more homogeneous, all involving the auxiliary "will." The past-tense items, on the other hand, have been varied to include an irregular verb thought to be rather common ("ran"); an irregular one thought to be rather uncommon ("swam"); a "d" allomorph which follows syntactic rules for past verb inflection ("burned"); and a "t" allomorph which is also rule-governed ("jumped").

Preliminary analysis of item difficulties tends to support such an interpretation. The percentage of children passing future-tense items is rather homogeneous, ranging from 40.8% correct on "will drink" to 48.6% correct on "will eat." However, item difficulties for the past tense are more scattered, ranging from 30.0% correct on "swam" to 51.7% correct on "ran."

This finding seems tentatively to correspond with analyses of the development of past-tense inflections in the productive speech of young children (Berko, 1958; Cazden, 1968). That is, irregular verbs must be learned as separate entities and by rote memory, and the more common irregulars ("went"; "saw") are the first to enter productive speech. As inflectional rules are learned, these tend to be overgeneralized to irregular verbs so that words once uttered correctly are later uttered incorrectly ("goed"; "seed"). In the realm of comprehension, it would seem that the majority of Longitudinal Study children are still overgeneralizing the present tense; but where the past is discriminated at all, it is most frequently discriminated as a rather common irregular verb form. However, confident interpretation of the verb inflection data must await more intensive item analyses.

Apart from item intercorrelations, it is inter-task analyses from both the 1969 and 1970 administrations that are most needed in order to attach either theoretical or practical significance to the verb inflection data. Cazden (1968, p. 444), for example, has tentatively suggested that:

> ...particular forms of parent interaction have less effect on more strictly grammatical aspects of the total language-acquisition process than on the more cognitive aspects. Basic grammatical structures seem to be learned despite differences in the child's linguistic environment, while how children use language to express ideas may be more vulnerable to environmental variation.

Such a hypothesis has important implications, and the Longitudinal Study affords an excellent opportunity to investigate it more thoroughly. Of even greater practical-educational importance is the opportunity to explore the relationship between comprehension and performance on specific tests that have frequently been used for evaluating language development in preschool and kindergarten children (e.g., the Peabody Picture Vocabulary Test and the Caldwell Preschool Inventory). Elsa Roberts illustrates the critical need for such an analysis in her examination of four measures commonly used to assess language ability--the Peabody Picture Vocabulary Test (PPVT), the Illinois Test of Psycholinguistic Abilities (ITPA), the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), and the Metropolitan Readiness tests. Among other rather devastating findings, she concludes that the tests make extensive use of structures which may interfere with the comprehension of five-year-old children, many tests presupposing virtually full adult competence in their instructions. In other words, children may fail certain items either because they do not know that item, or because they do not understand the sentence structure used by the examiner in telling them what to do.

In results previously cited for Matched Pictures in the New York City Study, it was stated that virtually all the children (both low and middle class SES) made correct responses on the present-progressive tense items. (In that version of the task, children were asked to point to present-tense pictures half the time and to either past- or future-tense pictures the other half.) In discussing the Uncertainty score, an assumption was made that the Longitudinal Study children also had the present-progressive tense well established and were systematically overgeneralizing this knowledge in making their many errors on past and future items. In order to test this assumption, four additional items were added to the task in the 1970 administration. The eight verb items were presented first, as in the 1969 administration, and then four of these items were repeated at the end of the test--with the children this time asked to point to the present-tense picture. Results from the 1970 administration should establish for certain whether or not the Longitudinal Study children know the present-progressive tense.

Conclusions

Data on Matched Pictures obtained in several studies show striking consistency and few differences between groups constituting the major variables of interest in the Longitudinal Study. The Uncertainty score, obtained only in the Longitudinal Study, tends to confirm a linguistic theory of children's acquisition of language knowledge. Results on the Prepositions and Negation subtests tend not to confirm widely-made claims regarding the incompetency of disadvantaged children in these areas. The subtests for future and past tense are by far the most difficult and account for most of the total score variance. Interpretation of the theoretical and practical significance of the verb inflection data, however, will need to wait for further analyses.

ETS Story Sequence Task I

Task Description

The ETS Story Sequence Task was designed to assess the young child's understanding and use of language in story sequences under three different conditions varying in terms of the degree to which the child is asked to use receptive and productive language skills. The materials consist of seven sets of cards with drawings of animals in various situations, including one instructional set and six test sets. There is no apparent sequence in the pictured situations--the sequence is provided by the verbal cues used in the stories. The test items are divided into three parts or item types which require different kinds of responses from the child: (1) child selects cards which "go" with a story, with no oral response required; (2) child listens to story and then recalls the same story, i.e., retells the story; (3) child produces his own story using cards he selects from an array. Story Sequence I is the first part of the total task. It is composed of two items of type 1 and focuses on the child's receptive language, i.e., his ability to use linguistic cues in the construction of a sequence. The child is presented with an array of cards, and he is asked to select a sequence of cards while listening to a story. There are two sequences: Tommy Kitten (3 cards) and Timothy Mouse (4 cards). Each correctly selected card is given one point so that the potential range for the two items combined is 0-7.

Results (See Vol. 2, Tables 255-262)

Age: In general, there was an increase in mean scores with age. This increase was consistent across all age ranges in Portland and St. Louis, but showed some slight discrepancies in the youngest and oldest groups in Trenton. However, in each of the sites and in the combined sample, the progression was consistent for the four middle age-ranges, which have substantial numbers of children. The potential range of scores from 0-7 is found in each age group of children, and the expected increase in percentage of perfect scores with age was again observed for the combined sample in the middle four age-groups of children (from 20.3% to 27.9%).

Site: The three-site mean score for the task was 4.0 with a S.D. of 2.2. The highest mean score of 4.6 occurred in Trenton and was somewhat surprising because of the relatively good representation of children in the lower age ranges--almost 8% of the sample was in the youngest group compared with 1.6% in the oldest group. This was followed by Portland's mean score of 3.8, representing a similar age distribution (i.e., 5.5% in the youngest group and 1.3% in the oldest group). In contrast, the mean score for St. Louis of 3.5 represented an older group of children (i.e., no children in the youngest group and 12.1% in the oldest group).

Sex: There is a small sex difference in mean scores for the combined sites in favor of the females (4.2 vs. 3.9), and similar differences are reported for each of the sites. The consideration of this difference must be postponed until the resolution of the problems described in Chapter 2.

School experience: The comparison of the combined-site mean scores of three groups of children (Head Start, Other Preschool, and "No Known" program) indicates that the Preschool group has the highest mean score (4.7), followed by children in the "No Known" group (4.1) and Head Start group (3.7). This order is not consistent for the three sites. The differences among the three groups of children within each site are quite small, with the exception of Portland, which reported a mean score of 3.5 for their Head Start group compared to 4.8 for the Preschool population. However, interpretation of such differences must wait until the problems of confounding are resolved.

Discussion

The findings are in general agreement with the results of the earlier use of this measure with 4- and 5-year-old children (Melton et al., 1968).

In that study, a significant SES difference was reported, and it will be of interest to look at this variable in later analyses of the current study. Some general characteristics of the task were evidenced in both administrations. The comments from the field indicate that the children enjoyed the task and 94% of the three-site sample were able to complete the task. The results on the instructional items were also similar for the two studies. There are two instructional items in the task: (1) picture cards are placed in left-to-right sequence as the examiner tells a story, and, after the cards are collected, the child is asked to replace them in the correct sequence; (2) picture cards are set out in random array, and the child is asked to select the appropriate sequence while listening to the story. If the child needs no help from the examiner, he receives a score of "1" for each item with a range for both items of 0-2. These results were not analyzed for the current study, but they indicate that the children were able to manage the task instructions--e.g., out of a sample of 150 children (first 50 children in each site), about 42% of the children required help on only one item, about 32% required help on both items, and 26% required no help on either item. The importance of the instructional items for this age group is apparent in that 90% of the 4- and 5-year-old children in the earlier study needed no help on item 1. It will be of interest to look at changes in instructional score as well as in task scores in the current study.

As stated earlier, Story Sequence I is only the first part of the total task. Many studies (e.g., Carson & Rabin, 1960; Loban, 1965) have found that tasks requiring the use of productive language are more difficult than those requiring the use of receptive language; this comparison will be made when the total task is considered at a later age level. Within the receptive language area, Story Sequence I and the Peabody Picture Vocabulary task both require similar modes of response (the former measures sentence understanding; the latter, single word recognition). The relationship between these two measures will also need to be explored.

Preschool Inventory (Caldwell)

Background

Bettye M. Caldwell developed the Preschool Inventory during the early years of the Head Start program to measure those skills and abilities which traditional schools assume kindergarten children to possess and which thus appear critical for successful performance in kindergarten. By "successful performance" was meant the child's ability to meet the implicit or explicit expectancies of kindergarten teachers in most traditional schools (i.e., schools based upon middle class behavioral norms). The 1970 Revised Edition of this instrument (used in this study) was reduced from an 84- to a 64-item test, but no new items were added, and its basic purpose remains the same. As stated in the 1970 Handbook:

> The Cooperative Preschool Inventory is a brief assessment and screening procedure designed for individual use with children in the age range of three-to-six years. It was developed to give a measure of achievement in areas regarded as necessary for success in school. It is by no means culture free; in fact, one aim of the instrument is to permit educators to highlight the degree of disadvantage which a child from a deprived background has at the time of entering school so that any observed deficits might be reduced or eliminated. Another goal in the development of the procedure was to make available an instrument that was sensitive to experience and could thus be used to demonstrate changes associated with educational intervention. (p. 4)

Task Description

The Preschool Inventory is not intended to be a homogeneous test. The task includes a wide variety of items: information about the self (e.g., name, age, parts of the body); number concepts ("more" vs. "less"); knowledge of basic sensory attributes (color names); spatial movement with respect to common environmental objects and phenomena ("Which way does a ferris wheel go?"); a rudimentary understanding of social roles ("What does a dentist do?"); and the ability to follow simple directions as well as relatively complex directions that presume an understanding of prepositions ("behind," "under," "in," etc.).

Each item is scored either right or wrong (1 or 0) according to criteria of "acceptable" responses given in the test manual. In some instances, the criterion cues are printed directly on the scoring sheet so that during the test administration the examiner can make on-the-spot judgments. For purposes of the Longitudinal Study, most of the children's responses were recorded verbatim, and scoring decisions were made by trained coders at ETS. Children who received total scores below 5 and a preponderance of "indeterminate" scores or who refused most of the items were eliminated from the data analysis (N = 29). Although the test items do fall within various content areas, there is no basis for deriving subtest scores prior to our doing a factor analysis. Thus, all data presented here are total scores for the 64-item test.

Results and Discussion (See Vol. 2, Tables 175-182)

The most striking results obtained from the Preschool Inventory may be summarized as follows: (1) Age is by far the most powerful of the major classification variables, accounting for twice the magnitude of difference between groups in the composite sample. (2) Unlike results obtained on many other tasks, age shows almost perfect consistency--only one reversal--across sites. (3) Despite differences between site populations, total scores are generally normally distributed and consistent from site to site. Data illustrating these results are presented in Table 4-9.

As can be seen in Table 4-9 there is a high degree of consistency in variance across all age intervals and sites. This consistency holds true not only for age, but for the other major classification variables as well. If one excludes the oldest age group at Trenton and Portland, the youngest age group at St. Louis, and the "preschool" group at St. Louis (because of the extremely small N's in these cells), there are 34 estimates of variance for major classification groups which may be considered fairly stable. The entire range of these 34 standard deviations is 7.4 - 12.2, but 31 of them fall between a range of 9.1 - 11.7.

Site differences: As Table 4-9 indicates, on the average, Trenton children scored lowest and Portland children highest, but the differences are relatively small; without further analysis of the differences in composition of these subsamples this finding is not readily interpretable.

Sex differences: Across sites girls obtained higher scores than boys. Differences, however, were small (composite Mean for girls = 28.6; Mean for boys = 26.5).

School attendance differences: Those children who were to attend Head Start scored significantly lower on this task. This was consistent across sites. Given the confounding among preschool attendance categories, this finding is not interpretable at this time.

Table 4-9

Mean Scores by Age Groups and Total Group for the Three Sites and Composite Sample

Age in Months	Trenton			Portland			St. Louis			Composite		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
42-44	28	23.79	9.96	24	19.71	10.61	0	--	--	52	21.90	10.37
45-47	74	22.93	9.15	114	26.18	11.40	21	19.48	7.4[illegible]	209	24.35	10.50
48-50	85	24.40	9.75	111	28.13	9.98	39	23.13	11.28	235	25.95	10.30
51-53	86	28.21	10.96	126	29.81	10.21	58	27.14	10.45	270	28.73	10.52
54-56	51	28.61	9.94	81	32.91	11.23	47	32.23	10.64	179	31.51	10.82
57-59	4	37.00	4.00	6	34.83	7.47	23	35.78	9.75	33	35.76	8.71
Total Group $\overline{X}$	328	25.82	10.24	462	28.59	11.04	188	27.78	11.37	978	27.51	10.90

An interesting but somewhat puzzling picture emerges when data from the Longitudinal Study sample are compared to other normative data. The Revised Edition of the Preschool Inventory was administered as a pretest to Head Start national evaluation samples in the fall of 1968 and 1969. Norms presented in the published technical report for the Revised Edition (ETS Handbook, 1970) were based on 1969 pretest data. Norms based on the 1968 pretest data had been computed by Dr. Dorothy Adkins at the University of Hawaii and distributed in mimeographed form to the Head Start Evaluation and Research Center Directors. Since the Handbook (ETS, 1970) norms are presented in broader age intervals than either Adkins' norms (1-month intervals) or the intervals presented here, the Adkins and Longitudinal Study data were converted into comparable age bands where possible, as seen in Table 4-10.

Table 4-10

Mean Scores by Age Groups for Three Separate Samples

Age in Months	1968 Head Start Evaluation Sample		1969 Head Start Evaluation Sample		ETS Longitudinal Study Sample	
	N	Mean	N	Mean	N	Mean
36-47	162	19.09	158	25.6	261	23.86
48-53	555	25.02	528	30.0	505	27.44
54-59	448	27.96	436	33.9	212	32.27

Before discussing Table 4-10, it should be noted where the age interval comparisons are not entirely comparable. The full 36-47 month age range is available only for the 1969 Head Start sample. The other two samples encompass only the upper end of that interval: 44-47 months for the 1968 Head Start sample, and 42-47 months for the Longitudinal Study sample. Considering just the two Head Start national evaluation samples first, the consistently lower means earned by the 1968 sample is a puzzling result--particularly in light of the fact that the first age interval is represented exclusively by older children (44-47 months) in the 1968 sample. A second interesting comparison is that between the Longitudinal Study sample and the 1969 norms reported in the Handbook. Since those norms include rural children, but the available Longitudinal Study data do not, it might be reasoned that the ETS study sample does not represent as "disadvantaged" a group as either of the national Head Start evaluation samples. Yet again, the 1969 Head Start sample means are consistently higher than the ETS study means. The cumulative effects of Head Start on the community, and especially on those families who have participated in the program, may account for these differences in 1968 and 1969 pretest performance. Differences between our data and those obtained in 1969 may be partially due to facilitating effects from exposure to the program. Further investigation of the population characteristics of these three samples needs to be made before any interpretations can be made or inferences drawn.

Future Analyses

Of critical importance, of course, is comparison of results obtained in the first and second administration of the Preschool Inventory in the Longitudinal Study. Are gains made by the children who actually attended preschool programs of a magnitude equal to those associated with age alone and reflected in Table 4-10? Analyses of individual items are also of great interest. For example, what is the relationship between the "More-and-Less" items contained in the Preschool Inventory and those contained in the ETS Matched Pictures test? Factor analysis of item data should also be run to determine item clusters and the possibility of forming meaningful subtests. Finally, if the Preschool Inventory is to enjoy continued use as a major Head Start evaluation instrument, it would seem crucial to examine individual items whose wording appears potentially confusing to <u>any</u> child 4 to 5 years old, let alone to children who speak a black English dialect mixed with standard English. In a recent paper, Roberts (1970) analyzes several language constructions commonly found in tests, but which are either known or hypothesized to be beyond the comprehension of most five-year-old speakers of standard English. Among the group of constructions known to cause difficulties are conditional markers in complex sentences with tense differences. Examples of such constructions are: "What would you do if you fell?" and "What should you do when you fall?" At least four items in the Preschool Inventory are of the prototype stucture: "If you were sick who would you go to?" Indirect questions are among the constructions hypothesized by linguists as creating difficulties--e.g., "Mark the one which tells how many balloons there are." Several questions in the Preschool Inventory would appear to meet the criteria of an indirect question (e.g., "Let's hear you count out loud"; "Point to the one that is most like a wheel"). Careful examination of these types of items and of group differences on these items is planned.

Cognitive Functions and Styles

Boy-Girl Identity Task

Task Description

The Boy-Girl Identity Task assesses the child's ability to conserve gender identity despite changes in stimuli which increasingly resemble the opposite sex. There are two tasks, each with five items. In Task I, a picture and name of a girl are first presented to S. Items consist of hypothetical changes in the girl's motives, action, clothing, and/or hair style. For example, Item 1 is: "If Janie really wants to be a boy, can she be?" A fully correct response to an item occurs when S indicates that the stimulus remains a "girl" despite the change suggested by E. In Task II, a picture of a boy is presented and named; items consist of hypothetical changes in which the boy's motives, action, clothing and/or hair style increasingly resemble a girl's. In this case, a correct response to an item occurs when S indicates that the stimulus remains a "boy" despite the change suggested by E.

A fully conserved response is scored 1.0, a partially conserved response is scored 0.5, and a response signifying no identity conservation is scored 0.0. In Vol. 2, Tables 55-158, the data for items are best read by looking at the percentage of subjects who received the score of 1.0 (full conservation). Where Mean Item Scores are reported, the mean or median is appropriate; for example, a mean of .2 signifies that, on the average, subjects conserved one out of five items.

Results

Level and variability of performance: Volume 2, Table 158 reveals a mean score for Tasks I and II combined of .21 for the total sample (N = 907), indicating that many subjects had not yet achieved a stable level of gender conservation. However, these scores ranged from 0.00 to 0.90 and the standard deviation was .179, indicating marked individual differences. These findings suggest that identity processes were tapped in this sample at the beginning of a period of accelerated growth. Although there are no established norms for this instrument, pilot work on middle class children suggests that the present sample may be somewhat slower in developing this kind of conservation. Of course, barring extreme pathology, gender identity conservation is achieved eventually by all children.

The items were designed to vary in difficulty, and they did, although not always as expected. Item 2 was clearly the easiest (28% correct) and Item 5 the most difficult (9% and 14% correct for Tasks I and II, respectively), with the other items varying in difficulty as a function of sex of subject and sex of stimulus (task).

Scale homogeneities: Preliminary examination of item and subscale correlations indicates the following: (1) Within each of the two tasks, four items were intercorrelated sufficiently to constitute scales (Median r = .28). The median part-whole correlation (within tasks) was .65. (2) The total scores on each task (summed across the five items) did not correlate highly (r = .17). (3) Item 1 was not homogeneous within either task, but this item was correlated across the two tasks (r = .47).

At least for the present sample, then, the instrument produces three reasonably homogeneous and orthogonal measures of gender conservation. The first score is for conservation of the identity of the girl stimulus (Task I, Items 2-5); the second is for conservation of the identity of the boy stimulus (Task II, Items 2-5); and the third is for conservation despite application of the same transformation to both stimuli (Tasks I and II, Item 1).

Sex differences: While absolute sex differences were not great, they were consistent and informative. Boys tended to conserve more than girls irrespective of task, and both sexes tended to conserve on Task II (Boy Stimulus) more than on Task I (Girl Stimulus). This pattern probably reflects the often-noted preference in both sexes for the masculine role during this age period, and provides some support for the construct validities of these two measures.

It should be emphasized that these sex differences represent small differences in absolute magnitude and that they should be expected to wash out when most children have achieved this kind of conservation.

School experience: There were differences among groups classified according to whether they attended Head Start (HS), no known preschool (Other [O]), or another preschool program (PS). However, any interpretation of these differences at this time is fraught with hazards. For example, the category "PS" could signify that these children were more advanced before entering any school, and/or that prior school experiences accelerated their performance relative to the other two groups. Moreover, only one child in St. Louis was classified "PS," so that comparisons are limited to Portland and Trenton.

With these cautions in mind, some differences are summarized which seem to favor the PS group relative to the other two groups. For Task I, this trend is apparent in Portland (Vol. 2, Table 99) and especially in Trenton (Vol. 2, Table 101). For Task II, the tendency is less strong in both sites (Vol. 2, Tables 147 and 149). For Item 1 in both tasks, the trend is especially striking, at least in Trenton (Vol. 2, Tables 61 and 109) and for Task I in Portland (Vol. 2, Table 59). It is noteworthy that in these comparisons the differences in magnitude are substantial.

Age trends: Great care is required when interpreting age trends, as age was confounded with site and perhaps with other factors. In general, the tendency to conserve gender identity did not increase monotonically with age. There was such a trend on Item 1 across tasks (Vol. 2, Tables 58 and 106), but it was weak, and there were no clear age trends for Task I (Vol. 2, Table 98) or Task II (Vol. 2, Table 146). In view of the sex of subject and sex of stimulus differences noted earlier, it would appear that the more appropriate analysis would be to examine age trends for each of the two tasks separately by sex. No further conclusions are warranted until this analysis is carried out and the problems of confounding are resolved.

Conclusions

These initial findings are generally encouraging, as they reveal three homogeneous and orthogonal measures, meaningful sex differences, suggestive differences among school experience groups, and levels of performance and individual differences signifying entry into a period of accelerated growth. Thus, longitudinal comparisons of the children's performances a year later should prove most enlightening.

Attention (Fixation Time Task)

Background

In a previous report (ETS, PR-68-4) we discussed the rationale for the inclusion of these attentional measures. To summarize briefly, we have found (Lewis et al., 1969) that attention, at least in the opening years of life, seems to be an index of early cognitive functioning. If this could be further demonstrated, we should have a good nonverbal measure of young children's subsequent cognitive function. Not only may attention be a prerequisite of subsequent cognitive function, but individual differences in attention, independent of their relationship to cognition, are likely to have effects on learning; the child who cannot concentrate or who grows bored quickly cannot obtain as much information from his environment as the child who can.

Task Description

In the present task, the child was led into a semi-darkened room, seated before a screen, and instructed to look at the pictures that appeared on the screen. The examiner went behind a pegboard partition and watched the child's behavior. (In past research the interobserver reliability for determining whether the child was or was not looking at the screen had varied between .60 and .99.) The task consisted of six trials of a redundant visual stimulus followed by a seventh trial which was a variation of the first six. Two series were presented: a nonsocial visual array, followed by a social array. The nonsocial array was a picture of twenty chromatic _straight_ lines in random arrangements followed by a seventh trial of chromatic _curved_ lines. The social array consisted of a chromatic schematic representation of a family: a woman, man, and young child. Six trials of this stimulus were followed by a seventh trial of the same schematic, this time without color. If needed, the children were given a break between the first and second series. No breaks were supposed to be given between any of the trials within each series. It should be recognized that these procedures had previously been used widely in the laboratory under ideal conditions that did not always exist for the present study. Rather, the observer was often visible, and there were distracting noises as well as other sources of error. However, the results presented below seem to indicate that even with these difficulties, the data approximate those which occur in more ideal experimental settings.

Results (See Vol. 2, Tables 263-406)

Three major results were expected for the group data: (1) response decrement should occur in the first six trials for each of the two arrays (that is, looking time should decrease in a negative exponential function, with most fixation time occurring on the first trial and amount of fixation leveling off by trial four); (2) when a new event is presented on the seventh trial, response recovery should occur (that is, the interest of the subjects should be renewed--an indication that the response decrement over the six trials does not signify receptor fatigue, but rather an active process whereby the organism decides that redundant information no longer has significance); and (3) there should be overall attentional differences between social and nonsocial stimuli (that is, fixation time should be greater for the social stimuli than for the nonsocial stimuli, rate of response decrement should be slower for the social stimuli than for the nonsocial stimuli, and response recovery should be greater for the social than for the nonsocial stimuli). These results were predicted on the basis of data previously gathered on children of

3 1/2 - 4 1/2 years of age as well as on infants in the first two or three years of life.

Figure 4-1 presents the fixation data for all subjects available. The data indicate response decrement in the form of a negative exponential function for both social and nonsocial stimuli. Moreover, there is greater attentive behavior for social stimuli than for nonsocial stimuli. The results also indicate response recovery on trial seven, with greater response recovery for the social stimuli than for the nonsocial stimuli. The only failure of prediction appears to be in the greater response decrement for the social than for the nonsocial stimuli. However, this finding may be a function of the fact that the social stimuli were looked at significantly more on trial 1 than were the nonsocial stimuli. Thus it was possible for the subject to pay less attention faster.

Site differences: Observation of site differences for the purpose of demonstrating replication indicates that both Trenton and Portland show the same results as described above. Because of equipment failures, fixation data were not collected in St. Louis. It is to be noted, however, that whereas Trenton and Portland showed a similar pattern of results, there were significant differences in fixation time, amount of response decrement, and recovery as a function of site. The reasons for these differences are not yet clear.

The major findings for this sample, in both sites, demonstrate the consistency of the attention distribution predictions for a wide variety of children.

Individual differences: As can readily be seen in Table 4-11, there is a wide range of individual differences in fixation time on each trial, as

FIGURE 4-1. Attention

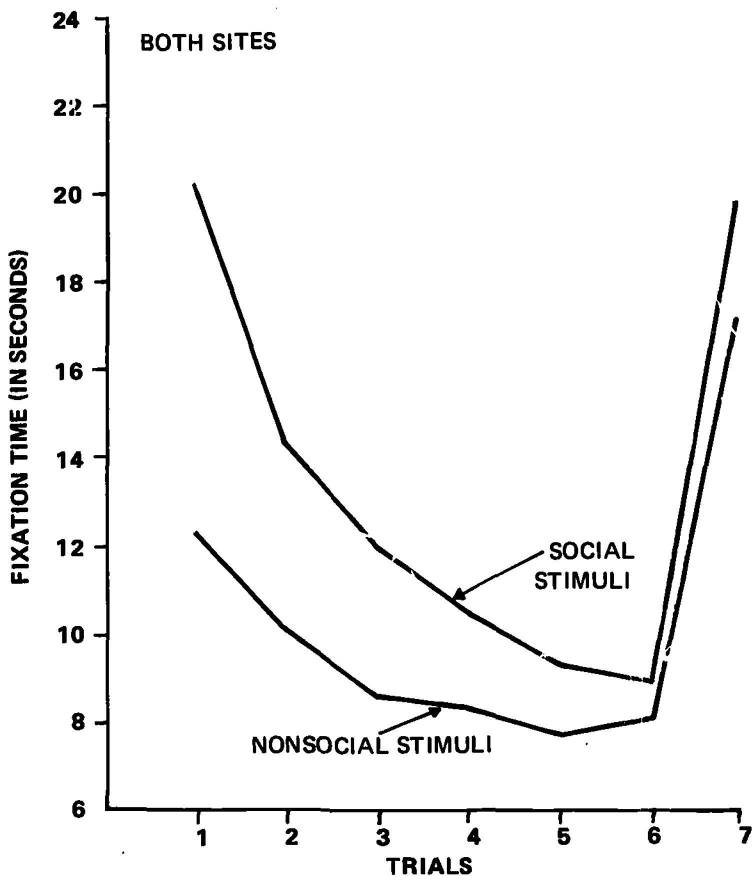

Table 4-11

Fixation Time, Recovery, and Response Decrement for Social and Nonsocial Stimuli on the Total Sample in Each Site

		Trenton						Portland					
		Nonsocial			Social			Nonsocial			Social		
		Mean	Mdn.	σ	Mean	Mdn.	σ	Mean	Mdn.	σ	Mean	Mdn.	σ
Trial	1	10.4	7.4	8.6	17.1	16.6	10.2	13.9	11.9	9.0	22.4	26.4	8.9
	2	8.3	5.7	7.5	12.8	10.5	9.5	11.5	8.5	8.7	15.6	13.6	9.6
	3	8.3	5.3	7.8	11.5	7.8	9.5	9.0	5.9	8.0	12.5	10.0	9.5
	4	8.7	5.5	8.2	10.5	6.9	9.2	8.2	5.6	7.7	10.6	7.1	9.3
	5	8.0	5.4	7.2	9.6	6.9	8.5	7.7	4.9	7.4	9.2	5.9	8.6
	6	8.7	5.5	8.2	9.3	6.5	8.4	7.8	4.2	8.1	8.7	5.1	8.6
	7	14.0	11.7	9.4	16.7	15.6	10.2	19.5	20.5	10.0	22.0	25.2	8.7
Recovery (7-6)		5.3	4.3	9.3	7.4	5.7	10.6	11.7	10.5	10.9	13.3	14.4	10.7
Response Decrement		.17	.16	.52	.39	.54	.48	.39	.55	.52	.57	.74	.44

well as on the measures of response recovery and response decrement. Except for 3 of the 28 cases (14 trials at 2 sites), the response distributions for each trial are positively skewed, with the median falling systematically below the mean. The standard deviations tend to be roughly the same order of magnitude as the means, except for the seventh or recovery trial and for the first presentation of the social stimuli, where they are somewhat smaller than the means. Sex and preschool attendance differences are not consistent across sites and await further analysis before interpretation of these findings can be made. There do not appear to be any clear or striking age trends in the scores from this instrument over the approximately one-year span covered by the data, but again, further analyses are needed.

Hess and Shipman Toy Sorting Task

Background and Task Description

If we are to understand the effect of environment on the development of the young child, the mechanisms that mediate between him and his environment must be studied. The mother may be seen as the most significant figure in the organization of the child's early experience, for she continually functions as a teacher in their everyday interactions, whether or not she is aware of her teaching role. Much of the implicit curriculum to which the child is exposed in his preschool years is conveyed by the communications he receives from her.

One method of studying mother-child communication is by observation of interaction situations structured so that the information to be conveyed to the child is constant for all subjects, but each mother is free to choose her communication techniques. The sorting task is especially useful for studying the mother's ability to transmit specific information to her child, her manner of presentation of the task, and her ability to discover and adjust to the child's difficulties or confusion. Moreover, the mother's strategies are likely to have consequences for the child's ability to grasp a concept or learn a lesson in other specific teaching situations; they thus affect the cognitive structures (preferred response patterns) that emerge in the child and his eventual educability in more formal, institutional settings. The degree to which styles of learning established at home facilitate or interfere with subsequent learning and teaching processes in the school may be assessed.

In differentiating performance of four-year-old urban working-class black children on a variety of cognitive tasks, Hess and Shipman (1965, 1968a) found the cognitive aspects of exchange, and the cognitive consequences to the child of the affective and control strategies employed by the mother, to be more useful than traditional measures of IQ and social class. Moreover, the results of a follow-up study (Hess, Shipman, Brophy, & Bear, 1969), when these children entered first and second grade, suggest that the mother's interactions with her child induce in him relatively enduring forms of information-processing. Some of the variables that particularly differentiated the good and the bad maternal teacher were: greater orientation to the task, reinforcement of correct responses more than errors, use of more specific language, greater reliance on verbal rather than physical feedback from the child, and preference for positively motivating the child rather than controlling him through implied threat. Differences among mothers in verbal products also indicated the extent to which maternal environments of the subjects tended to be mediated by verbal cues, and to provide adult models who demonstrated the usefulness of language in interpersonal interaction and in ordering environmental stimuli.

As in the work of Hess and Shipman, three separate situations were used in this study for investigating mother-child interaction. These included a relatively easy cognitive sorting task, a more difficult sorting task, and a task involving the copying of geometric designs. In the two sorting tasks, mothers were asked to teach their children to sort objects in specific ways and to explain the principles underlying the resultant groupings. This report is limited to a discussion of the first task, Toy Sorting, and to only those data concerning the child's performance in the test situation. Maternal teaching behaviors, and their interactions with child performance, are to be discussed in subsequent reports.

Procedure

After standard instruction for the mother with the child absent, the mother attempted to teach her child to divide a set of toys into three groups by the criteria of kind of object (small plastic cars, plastic picnic spoons, and dollhouse chairs) and of color (red, yellow, green) and to explain the reasons for these groupings. The mother was encouraged to use any method she desired and to manipulate the toys as she wished. At the end of 15 minutes (or sooner if the mother indicated she was ready), the child was tested. He was asked to sort the toys into the two groups his mother had shown him, and then to give his reason for sorting the toys as he did. Three trials were administered to elicit the two different sorts. On both the object sort and color sort, scores were given for placement (0-1) and for the verbal rationale (0-2). Points for verbalization were not given unless the child had sorted correctly. Whenever the test was recorded, the tapes were used to determine whether invalid probes or incorrect instructions had been given by the tester or whether, despite having being told she was not to help, the mother cued the child to the correct response.

Two differences in method from the original Hess and Shipman study involved teaching time and mode of observation. First, given scheduling demands and the fact that the modal time for subjects in the Hess and Shipman study under no time limit was 10 minutes, a 15-minute limit was imposed. In practice, almost all mothers indicated completion by that time. Second, since one-way observation mirrors were not available, testers remained in the room during the teaching session. They were trained to be as unobtrusive as possible, but one does not know the effect of this procedural change on the interaction situation. As in the earlier study, all teaching sessions were tape-recorded.

<u>Results</u> (See Vol. 2, Tables 407-462)

The difficulty level of the task was such that appropriate and useful responses could be obtained from the entire range of subjects. Although there were differences among the children in their degree of familiarity with the task materials and in their repertoire of labels for the attributes involved, the tasks themselves--sorting into groups and explaining the sorting principles--were relatively unfamiliar to all subjects, and continued to pose a challenge throughout the age range sampled.

As expected, the children's greater difficulty was verbalizing the rationale for grouping the toys. Although 46% of the children sorted the toys correctly by kind, only 19% correctly verbalized the sorting principle. Similarly, although 58% of the subjects sorted correctly by color, only 15% correctly verbalized their reason for doing so.* As in the Hess and Shipman study, differences were greater when the child was required to give a color rationale which taps abstract and categorical use of language as opposed to denotative and labeling usage. From the earlier study it had been expected, however, that a greater percentage of subjects would give a correct rationale for the object sort. The low figure obtained may be partially explained by the larger percentage of indeterminate verbal scores for the object sort (11% to 5%) due to tester errors. In most of these cases the child verbalized correctly, but since he had been given an incorrect instruction by the tester, his response was invalidated. It is possible that the mothers in our study, assuming that their children were already familiar with the object labels, spent more time teaching the color grouping and placed greater emphasis on having the child sort by color and give the color names. Analysis of the teaching sessions should answer that question.

Tables 4-12 and 4-13 present the data obtained by Hess and Shipman with four-year-old urban black children and those obtained with the black children in our sample. For a more accurate comparison, only those cases are included which had both valid placement and verbal scores.

As these tables indicate, the black children in this study scored at or below the level of those black youngsters in the Hess and Shipman study whose parents were employed in unskilled jobs and who had received less than a 10th grade education. This may be indicative of the lower socioeconomic status of

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*Note.--These percentages are slightly different from those obtained from the tables in Volume 2, since it seemed more appropriate for this comparison to use only those cases which had both valid placement and verbal scores.

Table 4-12

Child's Performance on the Toy Sorting Task - Mean Score

		N	Mean	S.D.
Hess & Shipman (Chicago)	Middle-class	40	2.6	2.0
	Working-class			
	Skilled	41	2.2	1.7
	Unskilled			
	Father present	40	2.1	1.9
	Father absent	41	1.9	1.4
Longitudinal Study	Portland	373	1.6	1.3
	St. Louis	173	1.9	1.4
	Trenton	226	1.8	1.5

the present sample. These findings, however, may also reflect the following factors which may have acted to depress scores. In the Hess and Shipman study, this task was always administered on the second day of testing; both mother and child had become familiarized with the testing situation and testing staff. In the present study, the mother-child tasks were scheduled for the first day of testing, since it was felt that the mother could help the child adjust to the testing situation. Therefore, the lower scores may reflect a general inhibition in the testing situation. Moreover, testers in the original study were experienced in testing adults and children; our local staffs were not.

Table 4-13

Child's Performance on the Toy Sorting Task

Object Sort: (By kind - cars, chairs, spoons)

		% Placed Correctly	% Verbalized Correctly
Hess & Shipman (Chicago)	Middle-class	61.5	28.2
	Working-class		
	Skilled	65.0	20.0
	Unskilled		
	Father present	68.4	29.0
	Father absent	66.7	30.8
Longitudinal Study	Portland	43.0	12.0
	St. Louis	54.0	25.9
	Trenton	40.6	20.8

Color Sort: (By color - red, yellow, green)

		% Placed Correctly	% Verbalized Correctly
Hess & Shipman (Chicago)	Middle-class	69.2	28.2
	Working-class		
	Skilled	67.5	15.0
	Unskilled		
	Father present	57.9	13.2
	Father absent	33.3	5.1
Longitudinal Study	Portland	58.6	10.6
	St. Louis	50.0	10.6
	Trenton	57.1	8.6

They were, therefore, less able to put an anxious child at ease. Consequently, a planned next step is to compare only the performance of those subjects where, according to the tape, testing was done well. In addition, many of our testers appeared especially uneasy when working with other adults. This may have led to poorer instruction of the mothers, a less relaxed atmosphere, and, consequently, less effective teaching by the mother. The child's performance may be reflecting a poorer instructional situation. Future analyses of the taped teaching sessions will help clarify this point.

Site differences: The findings reported above were generally replicated across sites. Differences between sites, however, were not consistent and require further analysis before any interpretation can be offered. The generally higher scores obtained in St. Louis may reflect the disproportionate number of older subjects in that sample.

Sex differences: Across sites, girls performed better than boys on this task. The differences were smallest for the object sort placement scores (.55 vs. .52) and greatest for the color sort verbal scores (.61 vs. .35). For both object and color sorts, differences were greater for the verbal scores. Except for the difference in color sort verbal scores, which is four-tenths of the standard deviation, these differences in mean scores are negligible.

Age differences: For the color sort, both placement and verbal scores showed a progressive increase with age. Except for the lowest age group, object sort verbal scores showed the same trend. Age differences within site, however, were inconsistent, with the youngest and oldest groups (having also the smallest Ns) showing the greatest number of reversals.

School experience: In general, those children who later attended Head Start obtained lower scores on this task, both for sorting and verbalizing behaviors.

The size of the differences obtained in mean scores increased from .07 for object placement scores to .28 for color sort verbal scores. The difference in percentage of subjects who gave correct responses ranged from 5% to 6% for the object sort and 12% to 15% for the color sort. An exception to this trend was found in Trenton, where those children who were to attend a preschool program other than Head Start scored lowest on the object sort (although highest on the color sort). Given the different composition of these subsamples across sites and the paucity of analyses presently available, it would be premature to speculate on the meaning of these findings.

Summary

Data from the Toy Sorting Task revealed that although approximately 50% of the youngsters were able to categorize, few were able to verbalize their reasons for doing so. This was particularly true for boys, for the younger subjects, and, to a lesser extent, for those who were later to attend Head Start programs.

Future analyses will investigate the relationship of the child's performance to maternal teaching strategies, particularly those involving a) the mother's attempts to motivate the child through presenting the task as an enjoyable experience, encouraging his efforts, and praising his success; b) the degree to which she provided orientation to the task before actually launching into it, and c) the degree to which she gave specific pre-response instructions and specific post-response feedback describing the cognitive operations of the child.

Future analyses will also be directed towards comparing these behaviors across the two sorting tasks. As was mentioned earlier, this is a relatively easy sorting task. Its major purpose was to give the subjects a general acclimation to sorting tasks and to allow the mother to establish a routine in her functioning as teacher. It also enables differentiation in the mother's teaching style when she is given a task that might be considered "natural" to her, as it requires responses identified as school-relevant.

According to Bernstein (1961), the structure of the social system and of the family shape communication and language; they, in turn, shape thought and cognitive styles of problem solving. Within that framework these maternal variables will be related both to contemporary indices of the mother's interaction with society's institutions, particularly the school, and to the child's functioning on the various linguistic and cognitive measures included in the present study. As Hess and Shipman (1965) have shown, restricted speech and status-oriented appeals of the mother are associated with the child's inability to use language as a cognitive tool--as reflected in his difficulty in giving rationales in the interaction situations and on other classification measures.

Early experiences with these maternal strategies not only influence the communication mode and cognitive structure, but they also establish patterns of relating to the external world. Of particular interest in assessing the child's educability will be to determine whether he takes an assertive exploratory approach to learning or one of passive compliance, and whether he tends to reach solutions impulsively rather than to reflect, to compare alternatives, and to choose among available options. The use of restricted speech and of status-oriented appeals by the parent probably restrict the number and kinds of actions and thoughts available to the child, thus limiting his tendency to reflect, to consider, and to choose among alternatives for speech and action. Such an environment produces a child who relates to authority rather than to rationale; who, although often compliant, is not reflective in his behavior; and who considers consequences of an act largely in terms of immediate punishment or reward rather than future effects and long-range goals.

Matching Familiar Figures Test

General Description

The Matching Familiar Figures Test is a measure of the response style "reflection-impulsivity." On tasks where there are several response alternatives and some uncertainty as to which is correct, some individuals--reflectives--typically take time to consider their possible responses, and have a relatively low error rate; others--impulsives--respond quickly and with a higher proportion of errors (Kagan, Rosman, Day, Albert, & Phillips, 1964). Response latency on tests of reflection-impulsivity has been found to be nearly independent of IQ, although errors are a function both of the stylistic variable and of ability. Reflectiveness is, however, related to performance on tests of reasoning (Kagan, Pearson, & Welch, 1966) and of word reading (Kagan, 1965) in early elementary children. Its implications for performance in children below school age are not known, but the dimension has been found to be present in kindergarten children (Ward, 1968a), and in middle class nursery school children (Lewis, Rausch, Goldberg, & Dodd, 1968). Inclusion of a measure of the dimension in the present battery, along with several other measures of impulse expression and control, will allow assessment of the generality and dimensionality of impulsivity in young disadvantaged children, and of its implications for cognitive performance at this age.

Procedure

The test used in the present battery was the version of the Matching Familiar Figures Test developed by Lewis et al. (1968), and used by them with middle class three-year-olds. The test consists of two practice and eighteen test items. On each item the child is shown one standard and four comparison figures and must point to the one figure among the four which is identical to the standard. Latency to first choice and number of errors (to a maximum of two per item) are recorded.

Two major scores were obtained from the data: Mean response time and mean number of errors. The latencies were Windsorized to a maximum of 20 seconds and then transformed by log (X + 1) before averaging, since their distributions were positively skewed, and it appeared desirable to decrease the maximum possible effect of a single unusually long latency on the score. Mean errors were expressed on a per-item basis, so that spoiled items could be eliminated from the average for a subject without affecting his possible error score.

Results (See Vol. 2, Tables 487-534)

A preliminary examination of the item data was made on a subsample consisting of the first 853 cases on whom coding was completed. This subsample may be unrepresentative of the entire sample in unknown respects, but it is large enough to suggest what will be found when the analysis is redone with complete data.

First responses to the various alternatives were examined for the eighteen test items. Subjects whose first response was correct ranged from 37.3% to 83.6% for the various items, with a median percent correct first response of 49.6%. The correct alternative was the modal first response for sixteen of the items; it missed being modal for the remaining two items by only a few percentage points. The most favored distractor was chosen with a frequency ranging from 8.3% to 46.5% of the subjects, and a median of 25% of the sample. The test, therefore, appeared to possess an appropriate difficulty level for the present sample; none of the items had unacceptable distributions of responses.

Six hundred eighty-four of the subjects in this subsample had item data which were complete--i.e., no items were omitted, refused, or spoiled. The intercorrelations of all item response-time and error scores were obtained for these subjects. For response time, item intercorrelations ranged from .27 to .52, with a median of .38. Errors intercorrelated from -.16 to .39, with a median of .12. Response-time and error scores, finally, correlated from -.14 to .19; the median was .001. Mean response-time and mean error, likewise, correlated .002 for the subsample. Thus, response-time intercorrelations were moderately high, while error correlations were low but positive--both in agreement with previous studies relating response-time and error scores across the several tests of reflection-impulsivity. The lack of relation between these two scores is not in agreement with previous work. Response time has shown negative correlations with errors, presumably because the reflective child does not simply delay his response, but uses the interval before responding to process the available information more thoroughly and, thus, increase his likelihood of a correct answer. The possibility is raised that these children show the consistency in response tempo which has been obtained for older children, but that this variance in tempo does not have the same implications for quality of performance for them as it has in older subjects.

Mean response time and mean error scores were examined for age, sex, and preschool attendance differences. Scores were obtained for the first eight test items, the last ten test items, and all test items, to allow examination of whether any systematic differences in performance were to be found between early and later items on the test. No major differences were evident; only the total scores need be considered.

Mean response time and mean errors both decreased with age within the sample. These trends were consistent across testing sites, and were large enough--on the order of four-tenths of one standard deviation--to be of interest. This is inconsistent with expectations from other work, where, over a broader age range, older children have shown longer response time and lower error scores than have young subjects. No explanation is available at this time.

No appreciable sex differences in these scores appeared. With regard to preschool attendance, the three groups did not differ consistently in mean response time, when data for the three testing sites were examined for consistency of differences. Error scores, however, did show differences. Children who would attend Head Start made more errors, on the average, than those who would attend other preschool programs; the difference was approximately four-tenths of one standard deviation, and was found in each of the two testing sites where comparisons can be made. Children in the "Other" category were intermediate in number of errors, again consistently so for all comparisons.

No interpretations should be made at this stage of the analysis. Several deviations from expectations were found in the data, and may not be fully resolved until longitudinal data for this test can be examined.

Motor Inhibition Test

Task Description

The Motor Inhibition Test was one of several measures of impulse control administered in this study. As a group, these measures will allow investigation of the dimensionality of impulsivity and of its implications for intellectual performance in young disadvantaged children.

This test requires the child to perform three motor acts--walking a line, drawing a line, and winding a toy jeep up to the rear of a toy tow truck. He practices each act and then performs it as slowly as he can. Maccoby, Dowley, Hagen, and Degerman (1965) found, with middle class nursery school children, that the time taken under the "slow" instruction was highly correlated across tasks and that it was positively correlated with IQ. Their results were replicated by Massari, Hayweiser, and Meyer (1969) with deprived preschool children, and by Ward (1968b) with eight-year-old middle class boys. The ability to slow down a response thus appears to be either a component of general intellectual ability, or a style which contributes to performance on intellectual tasks. This ability is also related to the individual differences in reflection-impulsivity which have been studied by Kagan and others (Kagan, Rosman, Day, Albert, & Phillips, 1964; Ward, 1968a).

Results (See Vol. 2, Tables 535-582)

The data consist of six scores--representing, for each of three subtests, the time taken on the practice trial and on the "slow" instruction trial. Two features of these data merit attention in this report. First, even under the slow instruction, children in the present sample performed the motor acts relatively quickly. The mean number of seconds to complete the walking subtest was 6.3; for drawing, it was 5.5; and for the tow truck, it was 44.5, under slow instructions. In contrast, a group of 30 eight-year-old middle class boys completed the same tasks in mean times of 23.4, 64.3, and 155.9 seconds, respectively (unpublished data from Ward, 1968). It is clear, therefore, that there is ample opportunity for further development in these children of the ability to slow down a motor response.

Second instructions to perform the act slowly, however, did lead children to perform more slowly on the second trial than on the practice trial for each task. Mean time scores under slow instructions represented an increase over practice times of 20% for the tow truck subtest, 33% for the walking subtest, and 50% for the drawing task. An increase in mean times from first to second trial was found on each subtest for each of the three testing sites, and within site for each age group into which the sample was divided. Thus, although the change in performance under the slow instruction was not large in absolute terms, it was highly consistent, and the children appeared to have had no problem in conforming to the task demand.

The data were examined for possible differences in age, sex, and preschool attendance groups. In general, all such differences were found to be trivial. For example, on each of the six trials of the test, girls performed more slowly than did boys; but the largest of the differences obtained amounted to one-eighth of one standard deviation, and there were several reversals in the direction of difference when data were examined by testing site. Likewise, children who were to attend Head Start performed both trials of the walking and drawing subtests more quickly than did children who would attend other preschool programs, but on the tow truck subtest the two groups differed in the opposite direction; these differences were typically about one-tenth of a standard deviation in magnitude. Finally, there was a tendency for both time under slow instructions, and the difference in time between practice and slow trials, to increase with age. Breaking the sample into six subgroups by age, and using the rank order correlation rho, age correlated .94, .42, and .60 with mean slow time for the drawing, walking, and tow truck subtests, respectively. For the difference between practice and slow instruction times, the respective correlations were .77, .94, and .91. However, the differences were again negligible, generally representing a small fraction of one standard deviation.

Correlational data have not yet been examined to determine whether all three subtests do in fact contribute to a single dimension of ability to inhibit response. All the subtests do, however, appear to merit further consideration, for they possess sufficient individual variance and sufficient sensitivity to the instruction to slow response.

Risk Taking 2 (Grab Bag Task)

Background

It is a well reported fact in the literature of achievement behavior that an important variable in children's and adults' performance is the feeling of competence. Rotter's notion of locus of control (Rotter, 1954)--the subject's belief that his actions either are or are not capable of producing consequences in the environment--has been shown to be an important motivational construct for predicting performance in school and in other intellectual and cognitive tasks (Lewis & Goldberg, 1969).

Unfortunately, no measure of locus of control is available for the very young. One purpose, therefore, in administering this task to the present sample was to assess the feasibility of devising a task which might be related to the variable of locus of control. It is reasonable to hypothesize that risk-taking behavior may be related to a person's feelings about his efficacy, and indeed, some reports in the literature suggest that subjects who feel powerful (that is, feel capable of manipulating their environment and receiving consequences from that manipulation) are more likely to be those willing to take risks in a risk-taking experiment. With this in mind, the investigator determined to devise a risk-taking task for the very young child. The present risk-taking task was so designed, and pilot studies indicated it to be an appropriate and reliable task for this age level.

Task Description

Briefly, the child was confronted with a problem of selecting a certainty--a toy placed in front of him--or of selecting a bag which he had been previously shown might contain five toys or none at all. Pilot testing indicated that five toys were about the correct number needed in order for the child not to choose the "certain" item. Small plastic cars were used for boys and small brightly-colored paper parasols for girls. Two trials were administered so that after the first choice, if the child had chosen the certain item, he could then be shown that the bag actually contained five of those items. After this, a new bag was placed on the table, and the child was again informed that the bag might contain either five items or none. He was then asked to choose again. This second trial was administered only to those subjects who initially had chosen the certain (i.e., visible) toy.

Results (See Vol. 2, Tables 687-702)

Because this task was developed specifically for this age group and because there is little information on four-year-olds' risk-taking behavior, little testing of the hypothesis can be offered at this point. Only future comparisons of this risk-taking behavior with other risk-taking behavior and performance on other tasks will show whether this measure has any validity. It was interesting to note, however, that on the first trial, 61% of the children tested chose the bag--that is, 61% of the children elected to take a risk. Of those remaining for the second trial, 43% switched from the certain item (i.e., the single toy) to preference for the bag. Thus at the end of two trials, 78% of the subjects at this age were willing to take a chance and to choose an uncertain situation.

Site differences: To determine whether these results were consistent (reliable) across all sites where this task had been presented, the data were examined. The results indicated a strong site difference. In Trenton, 73% of the children chose to take a risk and guess at an uncertain outcome, whereas in St. Louis 63% and in Portland 52% did so. The meaning of this site difference is uncertain at this point. The results, however, would seem to conflict with hypotheses concerning the relationship between socioeconomic status and locus of control; that is, the results indicate that at least 50% or more of these disadvantaged children were willing to take a risk. Future analysis will deal with the confounding factors and help clarify the relation between risk taking and locus of control. In any event, results clearly indicate that across sites over 50% of the children of this age level and SES classification, when confronted with this problem, will choose an uncertain outcome to a certain one.

Sex differences: In general, more males responded in the risk-taking direction than did females. Overall, 68% of the males selected the grab bag on trial 1 and only 53% of the females; of those remaining in trial 2, 50% of the males selected the bag and only 38% of the females did. This trend held up for both trials in all three sites. Although there appears to be a clear sex difference in response on trial 1, no clear statement can be made at this time concerning the reason for such a difference.

Age differences: There were no simple or consistent age trends apparent in the results for the relatively brief age span covered by the data.

Preschool differences: Although there were differences among the children as a function of the type of preschool program they would be exposed to, these differences were not consistent across sites.

Future analyses will be directed towards understanding these differences following resolution of the confounding of the above classifications.

Section D

Personal, Social Characteristics

Brown IDS Self-Concept Referents Test

Background

In view of the study's interest in eventually developing and testing a set of hypotheses relating child personality to environmental variations and to educational growth, the attitudinal domain of personality and especially the child's views of himself, of school, teachers, peers, and other significant elements in his environment were considered to be of particular importance.

An underlying assumption about the development of children is that their potential for learning is enhanced when they are relatively contented, are able to relate well to others, and have a generally positive self-concept. We also know that very young children are basically egocentric and that, as they develop, their sphere of contact widens. Fragmentary self-percepts in infancy are probably the earliest precursors of an adult's attitude and interest domain. During the early years the child develops attitudes toward himself and toward those people, objects, and events that are part of his immediate environment. Initially, therefore, it would be logical to study aspects of the child's attitudes toward self and family and interest in tasks with which he has had experience. As the child enters a school setting, his attitudes toward school and his teacher and his interests in school activities should also be studied.

There exist very few studies of the emergence and development of self-concept in young disadvantaged children (Wiley, 1961). Minuchin (1968) assessed the processes of curiosity and exploratory behavior in preschool disadvantaged children as these relate to self-image and found that those children with more active exploratory behavior were more articulate, had more positive self-images and had more adequate concept formation. Pierce-Jones and others (1968) posited that closeness of interpersonal relationships and the physical environment were important influences on self-perception. Their findings indicated improved self-perception scores for children placed in groups of four with an untrained mother and for those attending a Head Start class for six weeks. Edwards and Webster (1963) found that favorable self-concepts were related to higher aspiration and to greater academic achievement. Ethnic anxiety was found to be negatively related to self-perception and aspiration. Stabler and Johnson (1968) presented socially related stimuli to white and black Head Start children. They found that while there were no racial differences in matching assorted objects with a painted smiling face or a frowning face, both groups of children tended to guess that negatively-evaluated objects were in a black box while positively-evaluated objects were in the white box. As the results of studies on self-concept in disadvantaged children seem to suggest, self-concept is correlated with cognitive performance, academic achievement, and interpersonal relationships--all vitally related to the child's functioning in a school environment; with longitudinal data we may be able to tease out the causal sequence.

For the present study, the Brown IDS Self-Concept Referents Test was chosen to assess the variable of self-esteem and the child's perception of himself from the point of view of socially significant others. A Polaroid photograph of the child was used to induce him to take the role of another toward himself. The test's rationale uses Mead's notion of the evolvement of self-concept from one's perception of significant others' perception of self, thus making it suitable for observing the development of the young child's positive and negative conceptions of self as they interrelate with data on specific teacher-child, peer-child, and parent-child interaction behaviors. In Brown's (1966) study, 38 black (lower class) and 36 white (middle class) preschool children responded to 14 bipolar questions, first indicating how they perceived themselves to be, and then how their mothers, their teachers, and "other kids" perceived them. The self-perceptions of the black children were significantly less favorable than those of white children. Black children also perceived their teachers as viewing them in a less favorable light than did white children. However, black and white children did not differ in their perceptions of their mothers' or their peers' evaluations. The findings have since been replicated by Brown (1967) with similar subsamples. Brown's test is one of the few measures in the literature relating to the child's evaluation of "self as object" and "self as subject" which have reliability data and some evidence of validity for use with 4-year-old disadvantaged children. It was used in a subsample of the national evaluation of full-year 1967-1968 Head Start programs and thus also provides comparative data on other Head Start samples.

Task Description

A full-length colored Polaroid photograph is taken of each subject against a neutral, light-colored background; there are standardized instructions for posing. After taking the photograph, the tester asks for a response indicating that the subject is aware that he is seeing a picture of himself. A core of 14 bipolar adjectival items constitute the areas on which the subjects are to report both their own perceptions and their perceptions of their teachers' and peers' perceptions of them. These items are stated in the vocabulary of the 4-year-old child, and each question is asked with specific reference to the photograph which has been taken. All items are presented in an "either-or" format, the more socially desirable choice being scored "1"; the less socially desirable choice is scored "0." The complete procedure yields a "self-as-subject" score, "self-as-object" score, and scores for each of the referents taken singly. The "object" score is obtained by summing across the teacher and peer referents. Since data with children 3-6 to 4-6 indicate that many children have difficulty understanding the difference between self and other referents, only the first part of the test, concerned with the child's perception of self, was administered in the study's first year of testing, and only scores referring to the child's perception of self are reported here. Data were computed also for the total number of items to which the subjects made no apparent bipolar choice and which were consequently scored as indeterminate or as a refusal. The bipolar items used in the present study are listed below in abbreviated form. Here the positive choice is presented first, but in actual administration it was randomly assigned to first and second position.

<u>Items</u>

1. Happy-sad
2. Clean-dirty
3. Good looking-ugly
4. Likes to play with other kids-doesn't like to play with other kids
5. Likes to have own things-likes to have other kids' things
6. Good-bad
7. Likes to talk a lot-doesn't like to talk a lot
8. Smart-stupid
9. Not scared of a lot of things-scared of a lot of things
10. Not scared of a lot of people-scared of a lot of people
11. Likes the way clothes look-doesn't like the way clothes look
12. Strong-weak
13. Healthy-sick
14. Likes the way (my) face looks-doesn't like the way (my) face looks
15. Has a lot of friends-doesn't have a lot of friends

Although the last item regarding number of friends was not included in the computation of the self-concept score, it was added to the test because of its relevance to the young child's developing attitudes toward self, especially as peer interactions increase with the child's enrollment in a school program, and because of the possibility of relating this item to actual observations of peer interaction in later study years.

Results (See Vol. 2, Tables 159-174)

The data generated thus far seem consistent with the findings of other investigators (Brown, 1966; Clark et al., 1967). The self-concept scores obtained were predominantly high. The distribution was markedly skewed (mean = 10.6, S.D. = 2.7; median = 11.0, with the 10th percentile at 7.0), with slight variability shown among the different age, site, and preschool categories (Vol. 2, Tables 162, 166). Although cases where subjects received self-concept scores of 4 or below and had the remainder of items scored as indeterminate were excluded from these analyses, these constituted a very small number (N = 35); thus their exclusion could not account for the generally high scores obtained. There is not sufficient information at this point to interpret this finding with any degree of confidence. Since these data do involve children prior to their exposure to any school experience, one possible interpretation, in line with the test's rationale, might be the child's lack of differentiation of "significant others" at this early age. Moreover, the "significant others" of the child's environment who are presumably affecting his self-perception would be limited primarily to family members and particularly the mother, whom we might expect the child to perceive in at least a supportive role. Brown's original data involved children already enrolled in a Head Start program, thus the pronounced positive skewness of the scores will require further examination.

In comparing self-concept scores across sites, the investigator found the scores for Portland to be slightly higher than the scores for either Trenton or St. Louis; but until problems of confounding are resolved, these differences cannot be interpreted. As for the preschool categories, the scores of children who were later to attend Head Start were slightly lower for the Trenton and Portland sites. For the St. Louis data, the scores of the Head Start group exceeded those of the "Other" group; no comparison is possible with the group who were to attend a preschool program other than Head Start because only one case is reported. For the Trenton and Portland sites, this "preschool" group had scores higher than either of the other two classifications. Again, any interpretations must await further analysis of the data.

Generally, the self-concept scores of males (mean = 10.5) did not differ from those of the females in the sample (mean = 10.6), although males showed a slightly greater tendency to refuse or to give indeterminate responses (Vol. 2, Tables 166, 174). Similarly, age differences in the self-concept score were negligible. There was, however, a significant relationship between age and number of omitted items, with the younger groups of children not responding to a greater number of items (Table 4-14). These findings were replicated across sites. Given the frequency of omitted items, future analyses will include self-concept scores corrected for number of items omitted.

Table 4-14 suggests the confounding of a verbal comprehension factor which would need to be further investigated. Planned item analysis may reveal the content or wording of particular items to be inappropriate for use with this age level--eseecially for those items where a quantitat.ve element is involved (e.g., scared of a lot of things, scared of a lot of people, etc.). It has been noted in studying the individual answer sheets that subjects had less difficulty responding to those items using opposite adjectives than to those using negatives. Also, such an analysis might provide some insight intc the content areas having particular emotional significance to a child of this age as, for example, the items dealing with fear, possessions, etc.

Table 4-14

Mean Number of Items Where No Bipolar Choice Was Made

(3-Site Total)

Age	N	Mean	S.D.
42-44 mo.	49	2.10	3.64
45-47 mo.	206	1.41	2.53
48-50 mo.	239	1.09	2.19
51-53 mo.	356	1.11	2.38
54-56 mo.	187	0.81	1.60
57-59 mo.	33	0.42	0.75

The KR-21 coefficient of reliability for the self-concept score was computed to be .71 for this sample. R biserials for each item with the total score ranged, however, from .48 to .73. The two lowest items, 1 and 6, point out some of the other possible confounding aspects in interpreting this score as a self-concept score. Because of testers' and subjects' remarks, Item 1, "happy or sad" (R biserial = .56), was noted to be influenced by whether the child happened to smile when the photograph was taken. At this age, the child is much more likely to be responding concretely to immediate situational determinants, rather than to an inner state. Item 6, "likes other kids' things or one's own things," might be responded to from the sense an indigent child has of his real lack of material possessions rather than from his feelings of self-worth. And, before further interpretations of the data, another reservation should be noted here. The findings of Clark, Ozenhosky, Barz, and O'Leary (1967) indicate that self-perception responses to pictorial stimuli may be different from those made to verbal material covering the same content. If this is indeed the case, some consideration should be given to the implications of Brown's technique of using the child's picture to induce the young child into taking the role of another toward himself.

In contrast to Brown's findings, the scores of black and white children showed no perceptible differences for the three sites. The self-concept score for the Portland sample was slightly higher, as already indicated, but this higher score was true for both black and white children. As pointed out in Chapter 2, race differences are confounded with site difference, socio-economic indices such as mother's education and father's occupation, and participation in Head Start. Consequently, no interpretation of this result is possible at this time.

In addition to item analyses of the self-concept task it will be necessary to examine the relationship of this task's results with the results obtained from other tasks used in the study to measure personal-social variables. The nature of these relationships would help in determining whether the Brown self-concept task is discriminating children's perceptions of themselves at this age level. Examples of variables and the corresponding measures proposed for this next stage of analysis include achievement motivation (number of tasks refused; Open-Field Test); anxiety (insistence on mother's presence during test; Open-Field Test; mother-child interaction tasks); dependency (Open Field Test; mother-child interaction tasks); and perception (differentiation) of affect (mother-child interaction tasks). As outlined in an earlier report (ETS, PR-68-4), a number of questions from the interview, particularly those relating to the mother's expectancies for her child's achievement and her individuation of his behavior, are expected to relate to the child's emerging self-concept. Measures of the mother's warmth during the interaction situations and the control strategies she reports in the interview are also expected to have differential effect on the child's self-concept.

As the children in this study become exposed to school experiences, and as their interactions with peers and teachers increase, their response to a task of this type might also be expected to change. In subsequent study years, as longitudinal information on this task in its present form becomes available and as increased comparisons of its relationship to other variables in the domain of personal-social functioning become possible, the validity of interpretations of results will, of course, be enhanced.

Open Field Test

Most tests require the child to perform a narrowly defined task, and provide for step-by-step control over his activity by the tester. It is possible that there are important dimensions of behavior which are measured poorly or not at all in such situations, and which might be assessed by observing the child in a relatively unstructured play environment. Such dimensions would include both cognitive variables (e.g., complexity and duration of play activities) and personal-social ones (e.g., style in coping with an unfamiliar situation).

Task Description

The Open Field Test provided such a setting. Thus, after a child was halfway through one conventional test battery, he was brought into a new testing room. He was shown ten standard play objects arranged around the room; these were two dolls (one dark-skinned, one light), a truck, alphabet blocks, "Rising Towers" (more complex plastic building blocks), clay, crayons, felt-tipped markers, plain paper, and a coloring book. He was told that he could do anything he wanted with the toys. The tester seated herself in one corner of the room and remained there for ten minutes, initiating no interaction with the child and responding minimally to any overtures he made. During each thirty-second period of the test, she recorded and described every play activity involving each object, along with a variety of nonplay activities.

Since the instrument was designed for this study, no standard set of scores is available. Those which are reported here are simply a first attempt at meaningful measures, and they will be examined initially to determine which ones possess sufficient range and variance to serve as major dimensions of discrimination among children. Next, those cases in which possibly nontrivial age, sex, and preschool attendance differences were obtained will be mentioned. No interpretations of such differences will be made, since it is not possible at this stage in the analysis to take into account the possible confounding of these variables with socioeconomic status and with one another. Finally, an indication will be given of the additional scores to be derived from the Open Field data.

Results (See Vol. 2, Tables 583-686)

Two measures of the child's play activities with the ten objects were obtained. The first of these was the number of half-minute periods out of twenty during which he engaged in any play activities. This score did not discriminate well among children; the mean number of periods of play for the entire sample was 18.70 (S.D. = 3.84), and the median was 19.85. The "typical" child, then, remained involved in play throughout virtually the entire test period.

The second play measure was mean complexity of play. All activities with the objects were coded into one of four "levels." Roughly, level 1 play involved only attending to a play object; level 2, holding or manipulating it; level 3, playing with one object alone; and level 4, using two or more objects in an integrative activity. The complexity score is the mean level taken over all play activities recorded. This procedure made possible an objective and relatively straightforward approach to complexity of play, yielding scores whose ranking of subjects closely agreed with intuitive judgments of complexity. An adequate range of scores was obtained: over the entire sample, mean complexity of play was 3.10 (S.D. = .32), and the median was 2.98.

The remaining measures all concern the nonplay activities engaged in during the testing session. The tester recorded all verbalizations by the child, categorizing them as either directed toward the tester or toward the child himself. Scores were obtained for each of these major categories, and also for several subcategories within each. Both of the major categories yielded usable, although skewed, distributions when scored for the number of thirty-second periods during which the child spoke. For child verbalizations directed to the tester, the overall mean was 2.21 (S.D. = 3.75), and the median was 0.44. The least talkative 25% of the sample directed no verbalizations to the tester, while the most talkative 25% spoke to her in 3.06 or more observation intervals. Similarly, for verbalizations made by the child for his own benefit, the overall mean was 2.09 (S.D. = 3.98), and the median was 0.31. The least vocal 25% of the sample did not talk to themselves at all, while the most vocal did so in 2.45 or more of the twenty periods.

Subcategories of verbalizations occurred too infrequently to be usable as continuous scores. For child verbalizations directed to the tester, the following distinctions were made: (a) attempting to direct tester's attention to the task; (b) seeking help or direction; (c) attempting to discontinue the task; (d) other verbalizing, including nontask-oriented conversation as well as unclassifiable verbalizations. For self-directed verbalizations, the distinctions were these: (a) task-related, (b) nontask-related, and (c) unclassifiable. With the exception of the unclassifiable subcategories, none of these occurred with a median frequency larger than .10 of twenty observation periods.

The three remaining scores obtained also represented rare events. These scores were (a) number of periods during which the child approached or remained with the tester; (b) number of periods in which he made an overt attempt to end the task or to leave the testing room; and (c) number of periods in which he engaged in no overt activity, remaining inactive and inattentive. None of these scores had a median frequency of more than .07 out of twenty periods.

Discussion

Of the scores examined thus far, therefore, only three appear to be useful continua: (a) mean complexity of play, (b) verbalization directed to the tester, and (c) verbalization directed by the child to himself. The remaining variables discussed will be rescored as dichotomies--presence or absence of the behavior in each case except for number of periods of play activity, where the contrast will be between playing for all twenty observation periods and playing for less than twenty periods. However, because of the rareness of the events in question, they appear less likely to be important dimensions for discriminating among groups of children in performance on the task.

The three promising dimensions considered above were examined for group differences in age, sex, and preschool attendance. Only two such differences were found which were consistent across testing sites and which were large enough (approximately one-third of a standard deviation) to be meaningful. First, with regard to complexity of play, males had somewhat higher mean scores than females. For males, M = 3.15, S.D. = .36; for females, M = 3.04, S.D. = .26. Second, for child verbalizations directed to the tester, children who were to attend Head Start verbalized slightly less than children in the "Other" category, and both these groups were lower than children who would attend preschools other than Head Start. Means were 1.98 (S.D. = 3.71) for Head Start children, 2.25 (S.D. = 3.79) for "Other," and 3.11 (S.D. = 3.52) for children who would attend other preschools. Even these differences are quite small in terms of the possible range of performance; they do not suggest that there are qualitative differences in task performance differentiating any of the subgroups that have been examined.

A number of ways remain in which the data from this test will be examined. Of these, two examples conclude this report. One major analysis will be concerned with the length of sequences of continuous activity; it will allow assessment of the degree to which the child remained engaged in play activity with one or several objects over a number of observation periods or alternatively jumped from one activity to another. Second, preferences in play for particular toys can also be determined. The set of objects was chosen by the investigator to include toys likely to be sex-typed as appropriate for females (e.g., dolls), as appropriate for males (truck), or as sex-neutral (crayons), and also to offer differences in familiarity (familiar vs. novel building-blocks; crayons vs. magic markers). Thus, several contrasts of interest can be made concerning which objects the child spent his time in using.

Section E

Perceptual and Physical

Johns Hopkins Perceptual Test

Background

A number of recent investigators of perceptual and perceptual-motor abilities (Frostig, Maslow, Lefever, & Whittlesey, 1964; Kephart, 1960; Koppitz, 1964) have postulated the existence of a neurological developmental hierarchy underlying cognitive skills such as reading and writing. Although this concept has been challenged and related research on remediation is still inconclusive, the evidence seems to demonstrate a rather substantial relationship between specific learning disabilities and neurological impairment or immaturity, as inferred from performances involving various perceptual and perceptual-motor integrative functions. The work of C. P. Deutsch (1964, 1966, 1967), Pasamanick and Knobloch (1958, 1960), and Kawi and Pasamanick (1959) provides evidence for a relationship between higher incidence of these disorders and low SES.

Many elements of primary school programs are grounded in the assumption that if a pupil cannot differentiate the physical properties of one stimulus from those of another, he cannot, with any degree of consistency, learn to employ that stimulus as part of a symbolic system. Although the discrimination skills in question do not necessarily bear a continuous linear relationship to complex intellectual skills, it can be hypothesized that children who lack certain of these skills, whether through a developmental "lag" or through physical pathology, will not be able to benefit from many normal learning experiences. No further relationship is hypothesized between perceptual skill and educational development above a basic perceptual threshold.

Because of the wide range of theoretical questions and variables which could be investigated regarding perception in children, the conceptual schema used for this study (based largely on the findings of Birch & Lefford, 1963) included only those perceptual abilities which might prove empirically most relevant to educational development. The two criteria for relevancy were: (a) the ability is one which shows considerable development during the preschool-primary years and is related to educationally required skills, and (b) the ability is related to educationally required skills and may be impeded by neurological pathology.

The model postulates a developmental sequence from the basic perceptual skills used in form recognition through two paths that lead ultimately to reading and writing capabilities. From the first rudimentary figure-ground discriminations, perceptual development proceeds into form discriminations and form recognition. Form discriminations (including configurations and form rotations) differentiate subsequently into form analysis, form synthesis (integration), eye-hand coordination, form reproduction and, ultimately, writing skills. The developmental sequence from form recognition leads in turn to form memory, necessary for the reading skills.

The study's strategy is to look at the correlates of different levels of perceptual development and the degree to which the developed abilities seem to be modified through school experiences. Also of considerable interest is the identification and measurement of some perceptual abilities whose development might be expected in children by age three.

Task Description

The Johns Hopkins Perceptual Test, developed in 1966 by L. A. Rosenberg, A. M. Rosenberg, and M. Stroud, was used to assess form discrimination. The test is a series of printed cards whose two-dimensional drawings of standard stimulus forms are to be presented with a response card. The response card contains either two, three, or five forms, one of which is identical to the standard. The child is asked to point to the form on the response card which matches the stimulus form. Thirty such stimulus cards are presented. There are also three practice cards. If the child gives an incorrect response to the practice cards, the tester points out differences of features between the response form and the standard or their similarities.

Response cards vary in complexity in that a greater number of alternative forms are presented on successive cards (2, 3, 5), and the response forms on a card are either random angular shapes or variations of some standard shape such as a triangle. In order to control for any tendency on the child's part to choose unselectively the first shape that he sees, the tester slowly points to each of the response forms individually, instructing the child to look at each one before making a selection. This procedure is repeated at least once for each of the response cards. The raw score is derived by summing the total number of correct choices made; the possible total score is 30. For this task, two "subset" scores were also computed in accordance with a hypothesized difference of the perceptual factors actually being measured by the test. Gordon (1969) had made the distinction between items where the child is to respond to a figure as a whole and then make a comparison between two such "global" form perceptions, and items associated with the more complex figures where the child compares figures in terms of subtle differences in component parts. The former type of perceptual discrimination was hypothesized to constitute a "form perception" subset of the test, whereas the latter type of discrimination would constitute an "analysis" subset. Gordon distinguished 16 "form perception" items and 14 "analytic discrimination" items.

The investigator recognized that the task described above is almost identical to the procedures in the Matching Familiar Figures Test, also administered in the first year of testing. Thus, in order to control for possible effects of practice and familiarity, both the Johns Hopkins and the Matching Familiar Figures Tests were administered on the same day as part of the second testing battery, with the Johns Hopkins preceding the Matching Familiar Figures in the test series.

Results (See Vol. 2, Tables 463-486)

Since the Johns Hopkins Perceptual Test is still in an experimental stage of development, few comparison data are available, especially for disadvantaged populations. In general, other investigators (French, 1964; Gordon & Hyman, 1970; Rosenberg et al., 1966) have found discrimination of configurational differences to be one of the easiest perceptual tasks for children between three and six years of age. The results of the present analyses would seem to support the contention that form discrimination is a developing perceptual ability, one that is relatively well established in children by age three. The mean score for the combined groups was 16.3 (S.D. = 4.6). The task, though, did show general sensitivity to the range of individual differences at the youngest age level tested. Consistent across sites, total correct scores across age, sex, and preschool classifications were well distributed through the possible total range of 0-30; mean scores ranged between 8 and 23, with a median score of 16.5 (Volume 2, Tables 482 and 486). Moreover, the KR-21 coefficient of reliability for the total score was .74.

Sex differences were consistently negligible across sites (Table 486), with females receiving slightly higher scores (mean = 16.5) than males (mean = 16.1). With the exception at St. Louis, no significant mean differences by age were found. However, the St. Louis sample, with the smallest number of cases, showed a difference in mean total scores ranging from 13.4 (S.D. = 4.7) for the 45-47 month age interval to 17.8 (S.D. = 4.5) at the 57-59 month level (Table 480). These age differences for St. Louis will need to be further analyzed. With regard to the classification for preschool attendance, mean scores for children who were later to attend Head Start were slightly higher across sites than for those listed in the "Other" category. A comparison of mean scores with the group who were to attend preschools other than Head Start is confounded by the small number of cases reported in the cell for each of the three sites (Table 486).

Discussion

Interpretations of mean scores computed for the "perception" and "analysis" subsets will be more appropriate after further analyses have been completed which might justify the separation of two such subset factors within the test. Gordon had hypothesized that the analysis subset would yield significantly higher correlations with complex intellectual measures than would the perceptual subset. Future analyses correlating the two subset scores with other measures in the Year 1 Battery will enable us to test this hypothesis.

Rosenberg (1966) referred to this task as a nonverbal test of general mental ability. If his contention is correct, there should be a substantial correlation of the Johns Hopkins with the Peabody Picture Vocabulary Test and the Cooperative Preschool Inventory (Caldwell). Also, if one were to hypothesize that performance on a form discrimination task would be less affected by cultural differences than performance on more verbal tasks, scores on the Johns Hopkins should display smaller differences between culturally different groups or between deprived and advantaged groups. Another critical analysis would be to compare performance on this task with indices of possible neurological involvement, the latter available from the children's health data.

The present form of the test did not permit collection of reaction time data; a possible future procedural modification would be to introduce latency scores. In contrast to procedures on the Matching Familiar Figures Test, the instruction on the Johns Hopkins to look at each figure on the response card becomes largely contingent on the child's response. Thus, on the Johns Hopkins Perceptual Test, the tester may be seen as actively attempting to prevent impulsive responding. Comparing data obtained under these different conditions may contribute to our understanding of the impulsive style. Additional information on stylistic variables can be obtained from the children's use of early or multiple responses, from their response biases (e.g., position biases), and from the prevalence of unselective choices on tasks of this type.

Seguin Form Board Test

Background

The measures of perceptual-motor functioning used in the study have as one underlying rationale the need and opportunity to develop a diagnostic index of young children's neurological impairment (see "Measurement of Perception" in PR-68-4). Such an index would be useful in identifying children potentially vulnerable to psychoneurological learning disabilities. Because many perceptual characteristics would not be sufficiently mature in the study sample during the initial years of testing, the index would have to be derived from five major sources of information obtained over the full course of the study. These include: (1) neurological examination; (2) medical history; (3) observations of classroom activity level; (4) test data, the Seguin being one of six measures; and (5) observations of behavior during testing.

The Seguin can be viewed in two very different ways. First, it can be a measure of perceptual-motor coordination. The test was originally designed by Pintner and Patterson to measure this ability, and it has been long used in the Merrill-Palmer Scale of Mental Tests as a measure of form perception and eye-hand coordination (Stutsman, 1931). However, it should be remembered that "above a basic perceptual threshold, no relationship is hypothesized between perceptual skill and educational development" (ETS, PR-68-4, p. C-23).

A second and perhaps more interesting way of regarding the Seguin is as a measure of impulsivity. Such a possibility arises from the similarity between the task it provides and other measures in the study whose time and error scores serve as indices of the impulsivity-reflectivity variable. Impulsivity might logically be a salient characteristic of children's performance on the Seguin since the child is urged to go as fast as he can.

Task Description

The test materials consist of ten differently shaped blocks (circle, star, triangle, etc.) and a large form board with recesses corresponding to the various shapes. The board with the blocks in it is placed in front of the child so that he can study it for a moment. The examiner says: NOW WE ARE GOING TO PLAY A GAME. WATCH WHAT I DO. He then takes the blocks out of the board and stacks them in a designated order in three piles between himself and the board (consequently, the child reaches over the board to obtain the blocks). The next instructions are as follows: THIS GAME IS TO

SEE HOW FAST YOU CAN PUT THE SHAPES BACK WHERE THEY BELONG IN THE BOARD. WHEN I SAY GO, PUT ALL THESE SHAPES BACK IN THE BOARD AS FAST AS YOU CAN. READY? GO. (The examiner begins timing with a stop watch as soon as he has said GO.) This procedure constitutes the first trial of the test. The child is given three trials in all, each with essentially the same instructions except that on trials 2 and 3 he is explicitly told, SEE HOW MUCH FASTER YOU CAN DO IT THIS TIME. A trial is terminated when:

1. All blocks are placed correctly; or
2. The child indicates he is finished, even though his placements are incorrect or unfinished and he has been encouraged to continue; or
3. A three-minute time period has elapsed.

The test is scored in two ways. First, the time (in seconds) required for each trial is recorded. Second, the number of errors for each of the three trials is recorded. An error is considered to be any distinct attempt to put a form into the wrong recess on the board. No error is recorded if the child simply holds the block over the recess and looks puzzled or passes the form over the board searching for the correct recess. The form must touch the board to be counted as an error, but even in this case an error is not recorded unless the child makes an overt attempt to fit or force the block into an incorrect recess.

Results and Discussion

Before discussing results obtained on the Seguin, a comment should be made about the time data for each of the three trials presented in Volume 2 (Tables 705-758) of this report. These data include subjects who did not place all ten forms into the appropriate recesses within the three-minute time limit. The decision to include these subjects in the analysis was made on the pragmatic grounds of comparability to other studies using the Seguin. Actually, there is little information available as to whether other investigators had included "incomplete trial" subjects in their data analyses. Our best guess was that they had, and thus such subjects appear in the data presented here. However, to verify that these children did not unduly distort the data, future analyses will also be run with incomplete subjects eliminated. (Obviously, this same constraint does not apply to the data presented on "Fastest Time for Correct Placement.")

To comment generally, the data show a marked decrease in time scores over trials, with only a few reversals occurring (within the age groupings) at all three sites. The time reduction is most pronounced between trials 1 and 2, as might be expected from the examiner's explicit urging of "faster" on trial 2. A similar and consistent decrease over trials exists for the error scores in both Portland and Trenton, but not in St. Louis. At the latter site, mean error scores on trial 2 show an equal number of increases and decreases among the twelve marginal classification groups (no subjects were included in the youngest group at St. Louis). The trend between trials 2 and 3 was for decreasing error scores, with the net result being a decrease of only .16 between mean error score on trial 1 and mean error score on trial 3 for the St. Louis sample (N = 157). Although this site difference cannot be interpreted at present, a tentative hypothesis will be suggested in a later discussion of percentile and frequency distribution data.

A final general observation about the data is that both time and error scores show high standard deviations and ma..ed positive skewness. This is particularly true of the error scores. Thus, all mean scores reported in Volume 2 and in this chapter should be interpreted in light of the skewness.

Time data for individual trials: As noted, the largest reduction in time scores occurred between trial 1 and trial 2 at all sites. Since some further reduction did occur between trials 2 and 3, the data presented here concern only trial 1, trial 3, and (in some instances) the trial 1 minus trial 3 differences. In order to emphasize the essential similarity of results obtained between sites and the skewness of the distributions, Table 4-15 presents means, ranges, and medians (rounded to the nearest second) on trial 1 and trial 3 for the total sample tested at each site and for the composite sample.

Table 4-15

Time Score (in Seconds): Means, Ranges, and Medians on Trial 1 and Trial 3 for Each Site and for Composite Sample

Site	Trial 1				Trial 3			
	N	Mean	Range	Median	N	Mean	Range	Median
Trenton	309	72	22-180	65	317	58	15-180	50
Portland	395	81	24-180	67	392	58	18-180	47
St. Louis	157	75	22-180	61	157	65	21-180	48
Composite	861	77	22-180	65	866	59	15-180	48

With respect to the major classification variables, some minor site differences did occur, but overall there is again great consistency. At both Portland and St. Louis, age accounted for the largest group difference on trial 1 and trial 3--with preschool attendance and race following in that order. At Trenton, race accounted for the largest difference on trial 1 and preschool attendance on trial 3, with age a close second on both trials. Results for the composite three-site sample thus show that age accounted for the largest difference on trial 1 (the oldest subjects having a 22-second faster mean time than the youngest subjects) and preschool attendance on trial 3 (children classified as "Preschool" having a 19-second faster mean time than those classified as "Head Start"). Sex differences at all sites were negligible.

From a developmental viewpoint, it certainly is not surprising that age accounts for the largest difference in group performance on trial 1. Not only would older children within this age span be expected to have greater eye-hand coordination, but perhaps they would also comprehend more of the meaning and import of the initial instruction concerning the point of the "game" (i.e., to see how "fast" they could go). However, the youngest group showed the largest improvement of any classification variable group between trials 1 and 3, thus reducing the magnitude of difference between youngest and oldest on trial 3. Nonetheless, the age variable would have shown a somewhat larger difference on trial 3 had it not been for a reversal of the decreasing time trend among the very oldest children in the study (the 57-59 months age interval, with an N of 31 in the composite sample). A reversal of trend for this age group appears in other data as well and will be commented upon in later discussion. No tentative interpretation can be made regarding the preschool attendance variable on trial 3 until additional information on the composition of the groups is available.

Error data for individual trials: While site differences are more pronounced for these data, the most striking finding with respect to error scores is the relatively small number that are made by the Longitudinal Study children and the generally consistent developmental pattern reflected in their performance and the performance of children in past years. The median error score over all three trials for the composite Longitudinal sample is 7.5. The median error score norm over all three trials reported in the Merrill-Palmer manual for children at the 44.3 months age level is 9.0 (Stutsman, 1931, p. 190). Although no description is given of the sample on which this norm is based, there is reason to believe that it is similar to most other samples on which tests were normed during that era--white, middle class children. Granting that the Longitudinal Study sample is composed largely of children slightly older than 44.3 months (the Merrill-Palmer norm for our modal age group might be slightly lower than 7.5), it is nonetheless rather surprising to find such consistency between two samples that are separated by four decades in time and (presumably) a vast distance in social-psychological space. This finding would certainly seem to lend support to the original (PR-68-4) rationale: that above a basic threshold level there is little evidence upon which to hypothesize any relationship between perceptual skill and educational accomplishment. Basic perceptual maturation may be a relatively constant developmental phenomenon that is affected only by the most severe environmental deprivation and/or organic change.

The remaining data presented in this section pertain only to trial 1 and trial 3 results, rounded to the nearest decimal. As in Table 4-15 for time scores, Table 4-16 indicates, through means, ranges, and medians for the error scores, the skewed distribution obtained at each site.

Table 4-16

Error Score: Means, Ranges, and Medians on Trial 1 and Trial 3 for Each Site and for Composite Sample

Site	Trial 1				Trial 3			
	N	Mean	Range	Median	N	Mean	Range	Median
Trenton	311	4.4	0-23	3.8	318	3.4	0-29	2.3
Portland	394	4.3	0-30	2.2	394	2.5	0-23	1.5
St. Louis	157	5.6	0-24	4.5	158	5.5	0-36	3.4
Composite	862	4.6	0-30	3.2	870	3.4	0-36	2.0

Though there is a consistent trend for errors to decrease between trial 1 and trial 3 at all sites, inspection of Table 4-16 reveals a somewhat different pattern of performance by children in St. Louis. The mean error score for this site is noticeably higher than for Trenton or Portland on trial 1, and, unlike the other sites, there is hardly any shift downward between trials 1 and 3, with the median score and range on trial 3 being the highest. By plotting the frequency distributions at each site (based on the percentile data presented in Volume 2) we achieved a clearer picture of the St. Louis difference. Considerably more children at this site (though by no means the majority) made a larger number of errors on trial 3 than on trial 1--

that is, there was a greater tendency to make more errors as the children did the task faster. This finding might tentatively be interpreted in one of two ways: (1) there is a small number of children in St. Louis who do exhibit some lag in perceptual development; or (2) there is a greater tendency toward impulsivity among the children in St. Louis.

Of the major classification variables, age accounts for the largest difference between groups at all three sites on trial 1, and at St. Louis and Trenton on trial 3. "Preschool" shows the largest group difference on trial 3 at Portland. As noted previously with respect to the time data, there are some reversals in the trend for decreasing error scores among the age groupings. The most pronounced reversal for the composite sample occurs with the oldest children (N = 31) on trial 3. This result may be a function of the small N and reflect sampling instability; or, since St. Louis contributes a disproportionate number of children to the oldest age group, there may be something atypical about the older children at that site.

Fastest time for correct placement (out of 3 trials): These data are most interesting for several reasons. First, they obviously eliminate subjects who never completed the task. Second, they help put the St. Louis site difference in clearer perspective; and third, they again point up a puzzling but very consistent reversal of trend among the oldest subjects in the study. With incomplete trials (subjects) eliminated, site differences virtually disappear from these data--data which presumably reflect the best performance of which the children are capable. Table 4-17 illustrates this rather amazing site consistency. When the frequency distributions for each site are plotted from the percentile data, the resulting line graphs are practically overlapping. Thus, the deviance of St. Louis that is apparent in the error score data must be interpreted in context. The difference in Ns between Table 4-16 and Table 4-17 suggests that the deviance might be attributable to approximately 20 subjects. It should be noted, however, that these 20 subjects are not among the oldest age interval at St. Louis.

Table 4-17

Fastest Time (in Seconds) for Correct Placement:

Means, Standard Deviations, Ranges, and Medians for 3 Sites

Site	N	Mean	S.D.	Range	Median
Trenton	291	48.96	22.47	11-178	44.42
Portland	371	49.13	25.24	14-180	42.41
St. Louis	139	49.01	26.88	21-178	42.30

As far as major classification variables are concerned, age has the most powerful effect on group differences at all three sites and for the composite sample--despite the fact that there is a consistent reversal at all three sites among the oldest age group. Mean scores for fastest time to correct placement for the two oldest age groups (54-56 and 57-59 months) at each site are as follows: Trenton (41.76 - 41.95); Portland (43.01 - 44.13); St. Louis (39.58 - 46.57); Composite Sample (41.85 - 45.50). Though the magnitude of these reversals is minor at Trenton and Portland, their consistent appearance is curious. They seem particularly puzzling in light of the fact that only one other age reversal occurred (a difference of .32

seconds at Portland) and that the average reduction over all sites between age intervals was 6.12 seconds. No explanation of this phenomenon can be offered at this time other than that mentioned previously--i.e., it represents only sampling error or reflects something unusual about the oldest subjects at St. Louis.

Vigor Measures (Running and Crank Turning)

Background

A subject's vigor or physical energy may be an important measure in determining how he will respond to other tasks. The low-vigor child will not have "energy" to perform certain kinds of tasks, and this lack might be interpreted by a tester or a teacher as indicating lack of motivation. In our culture it is usually the vigorous child who is more acceptable socially than the nonvigorous child. There is, of course, a curvilinear relationship, with the too-vigorous child also being socially unacceptable. Data exist to show that vigor may also be confused with aggression; frequently, children who are energetic are labeled aggressive by their peers and teachers. Thus, a physical energy concept such as vigor appears relevant to school-related behaviors.

In order to measure vigor rather than mere muscle strength, one needs to devise tasks that are sensitive to this distinction. That is, it is clear that in some physical tasks children excel because they are strong rather than vigorous. But what we were interested in measuring was not whether the child does something, but how "vigorously" he does it. We knew, in the case of crank turning, that it was not difficult for most children to turn the crank;

the activity requires little muscle energy. What it does require, however, is vigor. Thus, to get at this vigor, we measured the number of crank turns per unit of time. Similarly, we were not interested in whether or not a child ran; but when children did run we wished to know how vigorously and in this case how quickly they ran.

Task Description

Crank turning, having to do with hand skills, and running, having to do with leg and general body skills, were tasks administered to obtain some overall measure of physical energy. Two trials of each task were administered to the children in the Study. Most often these physical tasks were used as filler tasks between those cognitive and intellectually demanding tasks which were also presented.

Results (See Vol. 2, Tables 759-806)

Few hypotheses can be generated about the data at this time. There exists little or no evidence in the literature about children's performance at this age on these tasks.

Site differences: For the running task, the mean running time for the 20 feet on trial 1 was 2.60 seconds; on the second trial it was 2.31 seconds. Thus it seems clear that there was a practice effect such that the children ran faster the second time they were given an opportunity to do so. This phenomenon of running faster on the second trial than on the first trial was replicated across each of the three sites. It is interesting to note that there are site differences in the running time across both trial 1 and trial 2 with Portland children running faster (2.14 second-average over both trials) than the St. Louis children (2.29 sec.) who, in turn, ran faster than the

Trenton children (3.12 sec.). Again, the meaning of such site differences remains undetermined and only future analysis can determine its present basis.

Crank-turning data also reveal a trial effect such that there were more crank turns per unit of time on trial 2 than on trial 1. In a 15-second period of trial 1, the mean crank turning was 10.39 turns, whereas on trial 2, the mean number of crank turns was 11.58. This difference was replicated across sites. Again, a significant site difference was observed in the number of crank turns, with the most crank turns occurring in Portland (11.35), followed by St. Louis (11.26), and finally Trenton (10.27).

Although both crank turning and running increase from trials 1 to 2, a first approximation of the relationship of these two vigor measures reveals that across site, sex, and age there is no positive correlation between these responses. Indeed, significant negative correlations were found: for trials 1 and 2, $r = -.23$, and over both trials, $-.25$. Thus a fast runner was a slow crank turner. This result is inconsistent with previously obtained data and raises questions about these measures for this sample which only further analysis can answer.

Although the relationship across vigor measures was negative, the relationship of trial 1 to trial 2 performance within a measure was positive, .70 for running and .75 for crank turning.

Age differences: While the data are not fully analyzed, there does appear to be almost a monotonic increase in vigor, as a function of age, with older children running faster than younger children, and older children turning the crank handle more than younger children did. This result suggests that these vigor measures may be more influenced by muscle strength than originally thought. Only further analysis, however, can confirm this supposition.

Sex differences: With respect to running time, there was no consistent pattern; however, males made more turns in the crank-turning task than females on both trials in all three sites.

Preschool group differences: There were no consistent results for either measure as a function of subsequent preschool experience.

Thus, four clear facts emerged from the vigor data at this point: (1) there is increase in vigor both in crank turning and in running from trial 1 to trial 2; (2) this effect can be seen across all three sites; (3) there appear to be significant site differences in terms of both running and crank turning with Portland showing the greatest response strength (faster running and more crank turning), followed by St. Louis, and last by Trenton. The reasons for these site differences are still unclear; (4) there is a negative relationship between these two measures of vigor. The reasons for this are not clear.

CHAPTER 5--DISCUSSION AND CONCLUSIONS

It has been emphasized throughout the report that this is but a first, and necessarily preliminary, description of the initial study sample. Test results are reported for only three of the four sites and for only half the Year 1 measures. They are based solely on initial descriptive analyses. As can be seen from the study goals outlined in the Introduction (Chapter 1), the project's focus is on interactions rather than on main effects; moreover, the questions being asked must be answered within a framework of repeated measures and observations of the same children (and their parents) over a period of time. Reviewing the tasks reported in Chapter 4, one may understand this project as a network of studies combined into a programmatic effort intended to make possible generalizations and interpretations of interactions that have heretofore been beyond the power of most child development research.

The results presented in this report provide the initial detailed sample description and part of the baseline data for projected future analyses. Partial answers to questions about the appropriateness of the various measures are provided by these results; the data also permit us to understand better the characteristics of the samples at the different sites. Much of this information will significantly influence the way we plan and conduct our projected analyses. For example, knowing the extent of the confounding of race and socioeconomic status with preschool program will necessitate our making a different set of comparisons than we might make if these factors were orthogonal.

The three cities being reported upon were deliberately chosen to vary in size, population stability, and degree of local community organization. A deliberate attempt was also made to obtain districts which vary in socioeconomic status and which are racially mixed. Chapter 2 points out the disproportionalities and confoundings among the major classifications that make simple interpretations of main effects and inferences about the population hazardous. Much more complex multivariate analyses will need to be performed. However, since our major concern is with understanding interactive processes, the naturalistic plan of following study families as they sort themselves into treatment groups (e.g., Head Start participation) is not only compatible with such a design but is to be preferred in generalizing to real-world subpopulations. Our aim is to delineate the relevant variables so as to understand individual differences and psychologically defined rather than static group differences. Thus, race or sex becomes significant only insofar as we understand associated variables that help explain particular interactions, such as those embodied in differential verbal communications between mother and child or the classroom teacher's differential use of praise and blame. Similarly, socioeconomic status is important to the extent that we delineate the component variables associated with the term, and use them as individual predictors within socioeconomic status levels. Variables such as socioeconomic status are thus seen as indicators of sets of more basic processes. Established relationships between these indicators and individual behaviors are valuable when they are meaningful summaries or composites of more fundamental process variables or when they suggest hypotheses for more detailed analyses of process variables.

Thus, the static group categories used in this report (sex, race, age), though useful for defining populations, will probably be excluded from future analyses, and more psychologically meaningful categories substituted (e.g., children experiencing Head Start programs of type X; children whose mothers feel powerless, or use restricted, reactive vs. proactive, elaborated teaching styles).

In Year 1, data were gathered across several domains, with multiple measures of variables within the domains. The subsets of measures described in this report represent each of the major domains, but to a necessarily limited extent. The variables they encompass will more fully be understood only after more intensive analyses are completed within and among domains. We would emphasize this caveat and those expressed earlier against premature generalizations, before we review briefly the findings in Chapter 4. It is essential to bear in mind that the apparent present focus on separate measures is designed only to accomplish <u>preliminary</u> analysis--a first stopping-point along the way to an intensive multivariate analysis.

To study family influences and particularly the mother's effect on the cognitive, personal, and social development of the young child, we administered structured mother-child interaction situations and a home interview. For this report, only data from the closed-ended questions of the interview are included, with resulting limited information on process variables. As the results indicate, the sample is predominantly a lower socioeconomic one, with many of the concomitants of low status: feelings of powerlessness and alienation from society, discrepancies between aspirations and expectancies, limited knowledge of community resources, limited home recources, less adult availability to the children, more physical crowding and material deprivation, greater reliance on kinship contacts, and substantially fewer fathers present in the home. Although a majority of mothers expressed positive attitudes about their local schools, a sizable minority remained who indicated their distrust and alienation from the educational systems.

Considerable variation, however, was also evidenced. The occurrence of this variability agrees with Zigler's (1968) conclusion that there are greater differences in child-rearing practices within social status levels than between levels and with Caldwell's (1970) recent discussion of the much greater range (than had previously been reported) in level of stimulation and support offered a child in lower-class homes. It is inappropriate, therefore, to speak in terms of a single homogeneous culture of poverty for, in fact, there exist many such cultures reflecting a variety of life styles. As Chilman (1966) and Rodman (1965) have pointed out, it is probably more accurate to speak of subcultures, since many goals of the poor are held in common with the larger society (e.g., wanting one's child to go to college). The poor, however, are forced to change goals or adapt goals to the realities of the deprivation in which they live. Thus their apathy and passivity may be seen as adaptive responses to frustrations and unpredictability.

To review the results obtained among sites: Portland mothers expressed greater feelings of efficacy, showed higher orientations to and expectations of achievement, spent more time reading to their child, participated more in groups and informal social activities; St. Louis mothers, on the average, were lowest in these behaviors and attitudes. The housing in these two sites were also markedly different, with most St. Louis families living in very crowded and decrepit housing. Although results obtained for Trenton families revealed many of the same low-income correlates as for St. Louis (but to a somewhat lesser extent), Trenton mothers showed more involvement in community organizations and greater participation in solving local community problems. Additional community data being collected should provide insights into some of the reasons for the differences between these urban samples.

Differences in demographic characteristics for mothers of boys and mothers of girls were negligible. However, certain behavioral differences were evidenced that require further analysis. There was a small but consistent trend for mothers of girls to be more involved in school relevant activities: reading to their child, feeling responsible for her school work, belonging to school-related groups, more frequent reading of newspapers and magazines, and more ownership of encyclopedias and dictionaries. Mothers' expectations of academic achievement also differed; on the Winterbottom and Caldwell items, although differences were small, they were consistently in favor of girls.

Those families who enrolled the study child in Head Start were, on the average, characterized by greater deprivation than those families who sent their child to other preschool programs or families who were not known to have enrolled their child in any preschool program. They lived in older, more run-down homes and under more crowded conditions. Fathers were absent in 50% of the "Head Start" homes. However, in contrast to families not known to have sent their child to a preschool program, they expressed somewhat more favorable attitudes towards local schools, participated somewhat more in the community, and expressed more active responsibility for their child's school performance. Since the Head Start group had a higher percentage of siblings who attended Head Start, this prior exposure to Head Start programs may account for their greater involvement with the schools and community; of course, it is equally possible that involvement in community concerns was what had led them in the first place to enroll their children in Head Start.

It should be pointed out that we obtained a quite sizable sample of poor white families, although it is small when compared to the total sample. There are, moreover, a number of families in the study who express considerable alienation and despair--a subpopulation that has typically been overlooked in previous research studies.

As discussed in Chapter 4, previously found correlational patterns among family status and process variables were suggested by the pattern of responses within our groups. Thus, greater availability and utilization of home resources were evidenced in the groups that are somewhat higher in socioeconomic level. Symptoms of apathy, alienation, and powerlessness also clustered together. Greater participation in events was associated with greater feelings of efficacy and optimism. Mothers' feelings of efficacy were associated with higher aspiration levels and increased achievement press for their children.

Future investigations will be directed toward analyzing the relationship of the various status and process variables with each other and with the several child measures. By isolating more exact indicators of home environment rather than just demographic characteristics, we hope to explain better why, within homes of the same socioeconomic status, so much variation in children's behavioral characteristics is found, and why there are so many notable exceptions to the "low status - low achievement" maxim.

To describe the child, we included measures to encompass the objectives claimed by preschool and primary programs, and the aspects of development that social science theory holds as important for human functioning. Measures were also included that would help us to delineate basic cognitive and personal-social processes and their course of development.

In the cognitive domain we included those variables directly related to academic skills or their precursors, those with particular reference to major cognitive theories (e.g., Piaget's; Guilford's structure of the intellect) and aspects of cognitive functioning indicated as important in previous research. The Preschool Inventory (Caldwell), ETS Story Sequence Test, ETS Matched Pictures Language Comprehension Test, and ETS Enumeration Test may be seen as assessing such skill areas. The Matching Familiar Figures Test, Motor Inhibition Test, Fixation Time, Risk-Taking 2, Boy-Girl Identity Task, and the Hess and Shipman Toy Sorting Task (child's performance) tap stylistic modes such as impulsivity and risk-taking or characteristics of cognitive functioning such as information-processing and attention.

In the academic-skill areas, scores were well distributed on each of the various tests. Matched Pictures and Story Sequence are both measures of receptive language. However, the former assesses syntactic comprehension and the understanding of grammatical rules, whereas the latter assesses the child's ability to use linguistic cues in constructing a sequence. Considering what various factors may affect production of language, we see the child's understanding of language, as revealed in his errors of commission in comprehension, to be most pertinent to assessing his language competence. On the Story Sequence Task the majority of children needed some help with the instructional items, and few were able to obtain perfect scores on the test items. But in contrast to previous findings by other investigators, on the Matched Pictures Test our sample children showed relatively good understanding of prepositions and negations; they had considerable difficulty, however, with verb inflections. Given the relative absence of behavioral cues indicating uncertainty in the child's response, these latter errors are seen as resulting from the child's initial tendency to overgeneralize language rules which he has learned; errors appear not to result from associative response tendencies. Story Sequence scores tended to be higher for older children, for girls, and for those who were to attend preschool programs other than Head Start. Differences among groups on the Matched Pictures Test were negligible, except for a consistent tendency to somewhat lower scores among children who were to attend Head Start.

The Enumeration Test taps the child's ability to itemize, a skill prerequisite for the later understanding and use of number. As with the Story Sequence Test, scores increased with age, children who were to attend Head Start programs performed poorly, and girls generally obtained higher scores than boys. The relative superiority of girls on this task and on the Story Sequence Test may reflect differences in sustained attention and in the following of sequential directions, rather than greater competence in verbal and numerical skills.

The Preschool Inventory assesses the child's general achievement of school-relevant learning. It measures the acquisition of facts and test-taking skills that are predictive of success in our present school systems. The mean scores obtained with the different age groupings in our sample approximated those obtained with the 1968 and 1969 Head Start national evaluation pretest samples. As would be expected, scores increased with age. Differences among other categorizations were negligible, but they were consistent with the above trends (i.e., girls scored higher than boys, and those children who were to attend Head Start obtained the lowest scores). Comparison of our data with pretest data collected for the 1968 and 1969 Head Start national evaluation samples suggests the cumulative effects of Head Start in communities and the facilitative influence of the first weeks of attendance in preschool programs.

Data from the Matching Familiar Figures Test and the Motor Inhibition Test should aid our understanding of the generalizability and dimensionality of impulsivity and help us clarify its implications for cognitive development and educability. Both tasks were sensitive to individual differences and seemed to reflect a consistency in the child's response tempo. On the Motor Inhibition Test children were able to control their response, and this ability increased within the relatively narrow age span of our sample. The unexpected lack of relationship between response time and errors on the Matching Familiar Figures Test may be a function of the child's present lack of understanding of the response required. Prolonged response times at early ages may represent inefficient attempts to adapt to the task with the attendant production of many errors; latencies may then decrease for the somewhat older child as the task is better understood but impulsively accomplished, and then increase again as the child attempts to perform more effectively with a minimum of errors. Sex differences were negligible for both tasks; children who were to attend Head Start appeared somewhat more impulsive on the Motor Inhibition Test and made more errors on the Matching Familiar Figures Test.

On the remaining measures of cognitive functioning, certain similarities were found. Tasks were of an appropriate range of difficulty and were sensitive to individual differences. Results were also consistent with previous research. Fixation time decreased in a negative exponential function with the repetition of both social and nonsocial stimuli, with response recovery occurring upon the presentation of an altered stimulus array; these effects were greater for social than nonsocial stimuli. On the Hess and Shipman Toy Sorting Task, although approximately half the sample could categorize, few children were able to verbalize their reasons for doing so. This was particularly true for boys, for the younger subjects, and somewhat less for those who were later to attend Head Start programs. Again, there were marked individual differences on the Boy-Girl Identity Task with most children not yet having reached a stable level of gender conservation. Children who were to attend other preschool programs conserved more, but scores did not increase monotonically with age. The finding that boys conserved more in general and both boys and girls conserved more on the Boy stimulus is seen as consistent with a previously noted preference for the masculine role at this age. On the Risk-Taking Task, children predominantly chose the "uncertain" outcome. Given hypothesized relationships with socioeconomic status and locus of control, this finding was unexpected.

As should be clear from the above descriptions, classification of the tasks within the cognitive domain does not imply their orthogonal relationship to the personal-social domain. For the young child especially, one cannot separate intellective and non-intellective factors. Moreover, social relationships and personal characteristics cannot be separated from the learning process. This becomes even clearer as we describe tasks in this report that represent the personal-social domain--

the Open Field Test and the Brown IDS Self-Concept Referents Test. Both include measures that may just as appropriately be labelled cognitive: complexity of play and number of indeterminate choices. In the Open Field Test, complexity of play scores were distributed across the possible range, and males obtained somewhat higher scores than females. Within the small range of verbalization frequencies obtained, those children who were to attend Head Start tended to be least verbal. The former finding is consistent with previous studies investigating curiosity which have reported boys as showing greater preference for complexity when the behavior is manipulation rather than visual attending (Lucco, 1964). Hirsch, Borowitz, and Costello (1969) have found with urban ghetto four-year-olds that a child's capacity for interaction with toys in a new environment has a moderate but significant correlation with his teacher's ratings of responsiveness and overall competence several months later in preschool.

On the Brown IDS Self-Concept Referents Test, self-concept scores were predominantly high, with those children who were later to attend other preschools scoring highest and those who were to attend Head Start lowest (except in St. Louis where the children with no known preschool attendance scored lowest). In discussing this task, we pointed out several confounding factors which cast doubt on the validity of this measure for assessing the child's feelings of worth. For example, the significant reduction of omitted items with age suggested that for younger children there was a contamination with comprehension. There were also more indeterminate and nonverbal responses given by boys.

As stated earlier, we had reservations about the effectiveness of the Brown Test for tapping self-concept at this age. Despite the recognized importance of assessing the child's self-esteem in order to understand his present performance and predict his future achievement, we found few age-appropriate measures available at the time of task selection. In this connection, unobtrusive observational measures have usually been found to be especially appropriate, but they were not feasible during our initial testing. During Year 2, observations of the child during free play in preschool classes, and greater emphasis during tester training on obtaining tester-child and child-task interaction data should enable us to derive personal-social measures and scales. They will also permit us to describe personal-social constructs in the clusters of specific variables that should emerge from subsequent analyses.

It is possible, however, that the generally high positive and undifferentiated self-esteem scores obtained do appropriately characterize the majority of our study children at this point in time. This finding is consistent with the unexpectedly high risk-taking behavior shown on the Grab-bag Task. As the child grows older, with increasing opportunity for interaction with others in a variety of situations, we would expect a more differentiated and realistic concept of self to emerge, resulting in a greater variance among scores. For many low-income children, especially those of minority status, such interactions may lead to negative self-evaluations and markedly lower scores.

The results from these two tasks point out a necessary distinction that should be made when discussing the interrelatedness of cognitive and personal-social domains. The Brown Test may be exemplifying the fact that young children may not be sufficiently mature cognitively for personal-social measures to have validity, whereas the Open Field Test raises questions concerning real interconnections due to shared processes.

Perceptual behaviors were tapped by the Seguin Form Board Test and the Johns Hopkins Perceptual Test. Both measures were appropriate in difficulty for this age range. Most children understood the behavior demanded by the Seguin; time and error scores decreased over trials, the youngest children catching up with the initially faster older children. Average performance on this measure of perceptual-motor coordination was similar to previous norms; except for higher mean error scores in St. Louis, site and sex differences were negligible. On a perceptual task not requiring motor coordination, the Johns Hopkins Perceptual Test, scores were also well distributed, with the mean approximately coinciding with 50% correct solution.

The physical domain is represented by the Vigor Tasks and the Child Health Record. Both running-time and crank-turning scores showed practice and age effects, suggesting that differences in coordination and muscle energy were also being tapped. The lack of correlation between these tasks may reflect the influence of a skill factor for this age group. On both tasks, Portland children had the highest, and Trenton children the lowest, vigor scores.

Notwithstanding the many cautions we advised in interpreting data from the Child Health Record, we find that the results do suggest differential exposure to antecedent conditions of risk, permitting us to delineate subgroups of children whose health-related conditions potentially handicap them for school adjustment. Consistent with previous research findings, we found a higher frequency of health-related problems in our predominantly low socioeconomic sample (e.g., more prenatal birth and postnatal complications, more abnormal findings on the visual and auditory screening tests, higher suggested incidence of neurological problems, below-average hemoglobin values and fewer immunizations). It is interesting to note that site differences in average hemoglobin values, which may reflect iron-deficiency anemia, paralleled the site differences in vigor scores (i.e., Portland highest and Trenton lowest). The St. Louis data suggest the pervasive physical and emotional consequences of living under deprived conditions. Other findings from the Child Health Record with immediate apparent relevance to the test results summarized above are the mothers' reporting of significantly more developmental problems for boys, especially concerning verbal skills, the higher incidence of a variety of health-related problems in the St. Louis sample, and the significantly fewer problems reported for those children who were later to attend other preschools.

The most compelling finding from the above summary of test results is the wide range of individual differences exhibited in this relatively restricted sample. Low-income youngsters are <u>not</u> a homogeneous group. Given a middle class sample, there would be considerable overlap in the distribution of scores, with differences within socioeconomic groups considerably greater than between groups. Youngsters from low-income families span a much wider range of cognitive, personal-social, perceptual, and physical functioning than some would have us believe. Many children performed well in a variety of areas. Conversely, there were very few "untestable" children. Of those problems reported, many were the consequence of the child's interacting with inexperienced testers. Using such a wide variety of tasks, one also becomes more aware of individual differences in the patterning of skills. Knowledge of such patterning of strengths and weaknesses is, of course, a necessary diagnostic tool for the effective planning of educational programs.

The measures discussed in this report were, with one possible exception (the Brown IDS Self-Concept Referents Test), appropriate for this age group. They were sensitive to individual differences, enjoyed by most children, and relatively easy to administer. Of particular importance for this age group was the fact that the tests were not speed tests [decrements in performance having been reported for black children when speed was demanded (Anastasi, 1961)] and the administration procedures allowed for great flexibility (e.g., brief interruptions could be taken for juice, the bathroom, or a run around the room; children could respond while sitting in a chair, standing, sitting on the floor or sitting on the tester's lap). Cognizant of the young child's greater susceptibility to situational variables in testing (Sattler and Theye, 1967), we geared the total testing climate toward making the young child more comfortable. Time was taken to establish rapport (in some cases, several days), relatively familiar and non-sterile testing rooms in church schools were used, and the tasks were administered by local testers whose dialect and race (wherever possible) were similar to the child's; (future analyses will investigate the influence of several tester characteristics on child performance); all these contributed to a congenial and supportive atmosphere. In addition, we attempted to schedule so that each mother could accompany her child on the first testing day. These differences in test conditions from the rigidities of standardized practice may have contributed substantially to the level of competency observed. We strove to eliminate all irrelevant difficulty in the hopes of increasing thereby the validity of the assessment.

In comparing test results, we found performance on the perceptual tasks to be generally higher than on those tasks requiring language skills; among the language tasks, we noted that higher scores were obtained on those tasks requiring a nonverbal rather than a verbal response. This was especially true for the boys in our sample. These findings are consistent with those reported by Ryckman (1967) and Palmer (1970) who found a low but statistically significant relationship between SES and comprehensive and expressive language facility, but no relationship between SES and perceptual discrimination and motor performance among black preschool boys. Because of the diversity of measures, individual differences were not only made more manifest, but also sex differences--especially task by sex interactions. However, there was no general finding of greater proficiency for females. Instead, on certain stylistic measures, such as the Motor Inhibition Test and the Matching Familiar Figures Test and on perceptual-motor tasks, sex differences were negligible; on tasks requiring more docile attending to sequenced instructions verbal responses, girls generally performed better (cf. Maccoby, 1966; Hess et al., 1969); on manipulatory and male-identified tasks, boys performed better.

Analysis of the results across preschool attendance categories is hampered by the disproportions found within sites and the confounding of this classification with race and parents' socioeconomic status. Although children who were later to attend preschools other than Head Start usually scored higher on most tasks, we cannot now interpret this finding--owing to the problem of confounding which we have already discussed. Similarly, we have, in Chapter 4, generally avoided racial comparisons because of the confounding of race with site differences, mother's education, and participation in Head Start. Moreover, there may also be other uninvestigated variables that are confounded with race.

After more intensive study of each task's characteristics, we will explore the interrelationships among measures within and across domains in order to pinpoint variables that are critical for understanding children's development and the differential effectiveness of program input. We expect not only the measures already described, but the others in the battery as well, to be differentially sensitive to cultural differences and to specific modes of teaching. For example, according to the test author's claim, scores on the Johns Hopkins Perceptual Test should differ less between disadvantaged and more advantaged groups than should scores on the Preschool Inventory; certain Piagetian measures should be less affected by differences in preschool experience. Basic perceptual maturation may be affected only by the most severe environmental deprivation and/or damage. As noted in Chapter 2, physically handicapped children were screened from the sample. The data from the Child Health Record and Seguin Form Board Test suggest, however, that there may be certain children, especially in St. Louis, who suffered early physical stress and who are now evidencing some lag in perceptual development. Although the physical development and health status indices obtained may not reveal any direct association with learning, they may be indicators of prior conditions or experiences that are influencing present functioning and may continue to influence the child's adjustment. We will investigate the interaction between health conditions and variables associated with social class, to ascertain whether cumulative effects appear that show significant, although indirect, links to learning. Moreover, we feel it important to identify those children who may be suffering from a syndrome which includes both physical and maternal deprivation, the latter perhaps arising out of the mother's sustained state of depression--a consequence of her bleak life situation.

In our attempt to examine the processes through which social and economic disadvantage affect the cognitive, social, and emotional development and educability of preschool children, we have paid special attention to family influences and particularly to the role of the mother in selecting, structuring, and transmitting information about the environment to her child and to her regulating his behavior in relation to both the environment and the information transmitted. The model of socialization employed here has been described previously by Hess et al. (1968). The connections between social structure and individual behavior are considered in terms of (a) the nature of the physical and social environment, (b) the effects of this environment upon adults, (c) its effects upon the adult's consequent interaction with children and (d) the behavioral outcomes that emerge in the children. Thus, the study has focussed on the mother's behavior and attitudes, especially those involving interactions with the preschool child. Particular emphasis in future analyses will be upon maternal teaching styles, control strategies, individuation, and feelings of powerlessness.

Other more specific investigations between family and child variables will include particular interactions between maternal behaviors and sex of child. The obtained difference between boys and girls in verbal performance may result from differential verbal interaction with the mother (both in amount and elaboration), as has been suggested in previous research (Goldberg, Godfrey & Lewis, 1967; Halverson & Waldrop, 1970; Hess et al., 1968; Moss, 1967) and in the preliminary interview data presented earlier.

Following the more probing analyses of Year 1 data, including those for Lee County, analyses will be directed to short-term longitudinal questions that can be asked of the Year 2 data. Not only are the present measures sensitive to individual differences at this age, but many of them are tapping processes prior to an expected period of accelerated growth.

For approximately half of the sample, we will be able to investigate the interactions among types of preschool program and individual child characteristics, identifying salient dimensions of variability and concentrating on variations in programming for individual children. With reference to the broad goals of Head Start programs, we would look for changes both in family and child behaviors. A major thrust of Head Start is to help the low-income family resist alienation--resist the tendency to turn away from the community. Both formal and informal contacts with others are valuable sources of information, attitudes, and values; they bring perspective on community norms. Previous research suggests that as the mother interacts more, she feels less powerless, more optimistic, and less likely to resort to status appeals for controlling her child. Thus, programs reducing alienation may in turn greatly increase the child's educability.

We would also expect that as a result of Head Start participation the family would become less alienated from the educational system and would come to define the school not only in a more positive way, but also in a more differentiated fashion, thereby providing the child with more adequate and useful images of the school, of the teacher, and of the role of pupil.

As the recently completed report about the impact of Head Start centers upon community institutions suggests (Kirschner Associates, 1970), Head Start's latent functions in the educational and health areas may well outweigh the manifest ones. We have the opportunity to study differences in communities over time and the interactive effects upon families. The diffusion of changes in the schools and local community would, consequently, act to minimize differences between Head Start and non-Head Start families.

Before concluding this report, we must make an additional statement concerning the data reported so far. They show that research can be done in low-income areas. It is accomplished by making measures as relevant as possible, getting advice from community members, pretesting tasks in similar communities, and recruiting and training local personnel to carry out most of the operations required. Local problems arose, of course, some of which are described in earlier progress reports. The experiences gained during our first year led us to some substantial changes in training and field practices during the second year of the study. Thus we have been strengthened in our belief that traditional training models must be questioned: effective training must involve mutual learning and cross-socialization. Carrying out individual testing of children is not the exclusive prerogative of the educational elite. The local women in our study learned to effectively perform a wide variety of demanding tasks. They managed well under many difficult local situations. Clearly, we have discovered a large pool of as yet untapped human resources. Through our joint efforts we hope to provide information that will make a significant contribution to the policy-making decisions affecting the well-being of our nation's children and their families.

APPENDIX A

PARENTS' OCCUPATIONAL STATUS

Table A-1

Mother's Occupation: Detailed Classification by Site, Race, Sex of Child and Child's Preschool Attendance

(H = Head Start, P = Other Preschool, 0 = No Known Preschool Attendance, and T = Total)

Portland: Male

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	1	2	0	3	0	3	2	5	1	5	2	8
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	1	0	1	2	1	0	1	2
4	1	6	0	7	10	11	3	24	11	17	3	31
5	0	1	0	1	0	1	0	1	0	2	0	2
6	0	1	0	1	0	1	0	1	0	2	0	2
7	1	2	0	3	5	10	1	16	6	12	1	19
8	1	4	0	5	15	15	3	33	16	19	3	38
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	1	0	1	1	2	0	3	1	3	0	4
11	11	37	5	53	52	43	11	106	63	80	16	159
T	15	54	5	74	84	86	21	191	99	140	26	265

Portland: Female

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	0	4	2	6	2	5	2	9	2	9	4	15
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	1	0	1	0	0	0	0	0	1	0	1
4	1	4	0	5	7	6	6	19	8	10	6	24
5	0	3	0	3	1	0	0	1	1	3	0	4
6	0	1	0	1	0	3	1	4	0	4	1	5
7	0	3	1	4	1	4	0	5	1	7	1	9
8	1	7	0	8	18	8	1	27	19	15	1	35
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	1	1	2	1	0	0	1	1	1	1	3
11	12	36	6	54	42	25	4	71	54	61	10	125
T	14	60	10	84	72	51	14	137	86	111	24	221

Table A-2

Mother's Occupation (Cont'd)

St. Louis: Male

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	0	0	0	0	1	0	0	1	1	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	3	0	3	2	5	0	7	2	8	0	10
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	1	0	1	0	1	0	1
7	0	1	0	1	1	4	0	5	1	5	0	6
8	0	2	0	2	8	21	0	29	8	23	0	31
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	2	0	2	0	1	0	1	0	3	0	3
11	11	28	0	39	23	32	0	55	34	60	0	94
T	11	36	0	47	35	64	0	99	46	100	0	146

St. Louis: Female

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	0	0	0	0	0	1	0	1	0	1	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	1	0	1	0	0	0	0	0	1	0	1
4	0	4	0	4	1	3	1	5	1	7	1	9
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	1	0	1	3	2	0	5	3	3	0	6
8	0	1	1	2	6	17	1	24	6	18	2	26
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	2	0	2	0	1	0	1	0	3	0	3
11	5	24	0	29	16	38	2	56	21	62	2	85
T	5	33	1	39	26	62	4	92	31	95	5	131

Table A-3

Mother's Occupation (Cont'd)

Trenton: Male

Occupation	White H	White O	White P	T	Black H	Black O	Black P	T	Total H	Total O	Total P	T
1	0	2	0	2	0	3	0	3	0	5	0	5
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	1	0	0	1	1	0	0	1
4	0	0	0	0	1	3	4	8	1	3	4	8
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	1	0	1	3	4	0	7	3	5	0	8
8	0	1	0	1	6	13	7	26	6	14	7	27
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	1	0	1	1	2	0	3	1	3	0	4
11	2	32	0	34	34	45	3	82	36	77	3	116
T	2	37	0	39	46	70	14	130	48	107	14	169

Trenton: Female

Occupation	White H	White O	White P	T	Black H	Black O	Black P	T	Total H	Total O	Total P	T
1	0	1	0	1	1	1	2	4	1	2	2	5
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	4	1	5	2	8	3	13	2	12	4	18
5	0	0	0	0	1	0	0	1	1	0	0	1
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	1	0	1	1	6	2	9	1	7	2	10
8	0	2	0	2	9	14	3	26	9	16	3	28
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	1	1	1	0	0	1	1	0	1	2
11	1	27	1	29	31	41	2	74	32	68	3	103
T	1	35	3	39	46	70	12	128	47	105	15	167

Table A-4

Mother's Occupation (Cont'd)

3-Site Total: Male

Occupation	White H	White O	White P	T	Black H	Black O	Black P	T	Total H	Total O	Total P	T
1	1	4	0	5	1	6	2	9	2	10	2	14
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	2	0	1	3	2	0	1	3
4	1	9	0	10	13	19	7	39	14	28	7	49
5	0	1	0	1	0	1	0	1	0	2	0	2
6	0	1	0	1	0	2	0	2	0	3	0	3
7	1	4	0	5	9	18	1	28	10	22	1	33
8	1	7	0	8	29	49	10	88	30	56	10	96
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	4	0	4	2	5	0	7	2	9	0	11
11	24	97	5	126	109	120	14	243	133	217	19	369
T	28	127	5	160	165	220	35	420	193	347	40	580

3-Site Total: Female

Occupation	White H	White O	White P	T	Black H	Black O	Black P	T	Total H	Total O	Total P	T
1	0	5	2	7	3	7	4	14	3	12	6	21
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	2	0	2	0	0	0	0	0	2	0	2
4	1	12	1	14	10	17	10	37	11	29	11	51
5	0	3	0	3	2	0	0	2	2	3	0	5
6	0	1	0	1	0	3	1	4	0	4	1	5
7	0	5	1	6	5	12	2	19	5	17	3	25
8	1	10	1	12	33	39	5	77	34	49	6	89
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	3	2	5	2	1	0	3	2	4	2	8
11	18	87	7	112	89	104	8	201	107	191	15	313
T	20	128	14	162	144	183	30	357	164	311	44	519

Table A-5

Father's Occupation: Detailed Classification by Site, Race,

Sex of Child and Child's Preschool Attendance

(H = Head Start, P = Other Preschool, 0 = No Known

Preschool Attendance, and T = Total)

Portland: Male

Occupation	White				Black				Total			
	H	0	P	T	H	0	P	T	H	0	P	T
1	4	9	2	15	4	8	2	14	8	17	4	29
2	0	0	0	0	0	0	0	0	0	0	0	0
3	2	3	0	5	3	1	2	6	5	4	2	11
4	0	7	0	7	2	3	1	6	2	10	1	13
5	2	4	1	7	1	2	0	3	3	6	1	10
6	1	12	0	13	10	11	6	27	11	23	6	40
7	1	13	1	15	10	23	3	36	11	36	4	51
8	1	1	0	2	6	6	0	12	7	7	0	14
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	4	0	4	12	8	1	21	12	12	1	25
11	2	1	1	4	2	6	0	8	4	7	1	12
T	13	54	5	72	50	68	15	133	63	122	20	205

Portland: Female

Occupation	White				Black				Total			
	H	0	P	T	H	0	P	T	H	0	P	T
1	1	6	2	9	2	4	1	7	3	10	3	16
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	14	2	16	1	2	1	4	1	16	3	20
4	0	4	0	4	1	3	0	4	1	7	0	8
5	0	5	2	7	0	1	1	2	0	6	3	9
6	5	10	0	15	9	10	2	21	14	20	2	36
7	7	16	0	18	14	10	3	27	16	26	3	45
8	2	4	0	6	4	2	1	7	6	6	1	13
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	4	1	5	7	5	0	12	7	9	1	17
11	0	1	0	1	7	4	2	13	7	5	2	14
T	10	64	7	81	45	41	11	97	55	105	18	178

Table A-6

Father's Occupation (Cont'd)

St. Louis: Male

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	0	0	0	0	0	1	0	1	0	1	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	1	0	0	1	1	0	0	1
4	0	2	0	2	2	1	0	3	2	3	0	5
5	0	1	0	1	0	0	0	0	0	1	0	1
6	0	5	0	5	2	3	0	5	2	8	0	10
7	7	19	0	26	6	8	0	14	13	27	0	40
8	0	1	0	1	1	10	0	11	1	11	0	12
9	1	0	0	1	1	1	0	2	2	1	0	3
10	1	4	0	5	1	8	0	9	2	12	0	14
11	0	2	0	2	5	5	0	10	5	7	0	12
T	9	34	0	43	19	37	0	56	28	71	0	99

St. Louis: Female

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	0	1	0	1	1	1	0	2	1	2	0	3
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	1	0	1	2	0	0	2	2	1	0	3
4	0	1	0	1	1	1	0	2	1	2	0	3
5	0	0	0	0	0	0	0	0	0	0	0	0
6	1	6	0	7	2	7	1	10	3	13	1	17
7	2	11	0	13	5	9	0	14	7	20	0	27
8	0	1	0	1	3	2	0	5	3	3	0	6
9	0	0	0	0	0	2	0	2	0	2	0	2
10	1	8	0	9	0	10	0	10	1	18	0	19
11	1	1	1	3	1	6	1	8	2	7	2	11
T	5	30	1	36	15	38	2	55	20	68	3	91

Table A-7

Father's Occupation (Cont'd)

Trenton: Male

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	1	5	0	6	0	2	0	2	1	7	0	8
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	7	0	7	0	0	0	0	0	7	0	7
4	0	1	0	1	2	1	1	4	2	2	1	5
5	0	1	0	1	0	0	0	0	0	1	0	1
6	0	8	0	8	3	6	0	9	3	14	0	17
7	1	9	0	10	7	13	1	21	8	22	1	31
8	0	2	0	2	8	4	2	14	8	6	2	16
9	0	0	0	0	0	1	0	1	0	1	0	1
10	0	0	0	0	4	11	5	20	4	11	5	20
11	0	0	0	0	1	7	0	8	1	7	0	8
T	2	33	0	35	25	45	9	79	27	78	9	114

Trenton: Female

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	0	5	0	5	0	2	0	2	0	7	0	7
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	4	0	4	0	0	1	1	0	4	1	5
4	0	0	0	0	1	1	0	2	1	1	0	2
5	0	4	0	4	0	0	0	0	0	4	0	4
6	0	9	0	9	2	6	1	9	2	15	1	18
7	1	6	1	8	8	23	1	32	9	29	2	40
8	0	2	1	3	3	7	1	11	3	9	2	14
9	0	0	0	0	3	0	0	3	3	0	0	3
10	0	4	0	4	6	7	1	14	6	11	1	18
11	0	0	0	0	2	5	0	7	2	5	0	7
T	1	34	2	37	25	51	5	81	26	85	7	118

Table A-8

Father's Occupation (Cont'd)

3-Site Total: Male

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	5	14	2	21	4	11	2	17	9	25	4	38
2	0	0	0	0	0	0	0	0	0	0	0	0
3	2	10	0	12	4	1	2	7	6	11	2	19
4	0	10	0	10	6	5	2	13	6	15	2	23
5	2	6	1	9	1	2	0	3	3	8	1	12
6	1	25	0	26	15	20	6	41	16	45	6	67
7	9	41	1	51	23	44	4	71	32	85	5	122
8	1	4	0	5	15	20	2	37	16	24	2	42
9	1	0	0	1	1	2	0	3	2	2	0	4
10	1	8	0	9	17	27	6	50	18	35	6	59
11	2	3	1	6	8	18	0	26	10	21	1	32
T	24	121	5	150	94	150	24	268	118	271	29	418

3-Site Total: Female

Occupation	White				Black				Total			
	H	O	P	T	H	O	P	T	H	O	P	T
1	1	12	2	15	3	7	1	11	4	19	3	26
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	19	2	21	3	2	2	7	3	21	4	28
4	0	5	0	5	3	5	0	8	3	10	0	13
5	0	9	2	11	0	1	1	2	0	10	3	13
6	6	25	0	31	13	23	4	40	19	48	4	71
7	5	33	1	39	27	42	4	73	32	75	5	112
8	2	7	1	10	10	11	2	23	12	18	3	33
9	0	0	0	0	3	2	0	5	3	2	0	5
10	1	16	1	18	13	22	1	36	14	38	1	54
11	1	2	1	4	10	15	3	28	11	17	4	32
T	16	128	10	154	85	130	18	233	101	258	28	387

APPENDIX B

MEASURES

CHILD HEALTH RECORD

Child I.D. Number	NAME OF CHILD (LAST, FIRST, MIDDLE)
	HOME ADDRESS

ILLNESS HISTORY

HAS CHILD HAD OR DOES HE HAVE:	YES	NO	DATE	DESCRIBE DETAILS OF ANY ITEM CHECKED "YES"
MEASLES (RUBEOLA)				
MUMPS				
CHICKEN POX				
RUBELLA (3-DAY OR GERMAN MEASLES)				
WHOOPING COUGH				
SEIZURES, FITS, OR SPELLS				
TONSILLECTOMY				
ANY HOSPITALIZATION				
EXPOSURE TO TUBERCULOSIS OR PERSON WITH CHRONIC COUGH				
FREQUENT BEDWETTING NOW				
ANY KNOWN CHRONIC DISEASE OR HANDICAPPING CONDITION				
OTHER SERIOUS ILLNESS				

IMMUNIZATION RECORD

1. DPT
   a. ___ Has never been immunized for DPT
   b. ___ Has received at least one dose, but not fully immunized
   c. ___ Was fully immunized for DPT (had at least 3 doses of vaccine, the most recent within the past 2 years)
   d. ___ Has unknown DPT immunization status

2. Polio-myelitis
   a. ___ Has never been immunized for polio
   b. ___ Has received at least one dose of polio vaccine, but was not fully immunized
   c. ___ Was fully immunized for polio (has received at least 3 doses of trivalent oral polio vaccine, the most recent within two years; or had received polio vaccine, the most recent within two years)
   d. ___ Has unknown polio immunization status

3. Small-pox
   a. ___ Was never vaccinated or vaccination was not successful
   b. ___ Has received a successful smallpox vaccination DATE________

4. Measles
   a. ___ Was never immunized against measles
   b. ___ Has been immunized against measles DATE________

PREGNANCY AND BIRTH HISTORY

PLACE OF DELIVERY (NAME OF HOSPITAL)

PREVIOUS PREGNANCIES TOTAL NO. | MISCARRIAGES | STILL BIRTHS	BABY'S BIRTHWEIGHT	BABY'S HEIGHT

MOTHER'S HEALTH DURING THIS PREGNANCY ☐ EXCELLENT ☐ OTHER (DESCRIBE)

DELIVERY ☐ NORMAL SPONTANEOUS VERTEX ☐ OTHER (DESCRIBE)

DID BABY ARRIVE
☐ ON TIME ☐ EARLY BY _____ WEEKS ☐ LATE BY _____ WEEKS

ILLNESS OR COMPLICATION IN NEWBORN PERIOD ☐ NONE ☐ OTHER (DESCRIBE)

FAMILY AND HOUSEHOLD

NAME	DATE OF BIRTH	LIVES WITH child YES	NO	HEALTH PROBLEMS AND SCHOOL PROGRESS
CHILDREN IN ORDER OF BIRTH (LIST ALL PREGNANCIES INCLUDING PATIENT) 1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

ARE THERE ANY DISEASES WHICH "RUN IN THE FAMILY"?
☐ NO ☐ YES (DESCRIBE)

DEVELOPMENTAL HISTORY

COMPARED WITH HIS BROTHERS AND SISTERS AND WITH OTHER CHILDREN HIS AGE, HAS THIS CHILD BEEN PARTICULARLY FAST OR SLOW IN:	FAST	ABOUT AVERAGE	SLOW	COMMENTS
WALKING, RUNNING, CLIMBING				
TALKING				
PLAYING WITH TOYS, COLORING, DRAWING				
UNDERSTANDING WHAT IS SAID TO HIM				
GETTING ALONG WITH CHILDREN HIS OWN AGE				

IS THIS CHILD CONSIDERED BY HIS MOTHER OR BY OTHERS TO BE PARTICULARLY:	YES	NO	COMMENTS
"DIFFICULT" OR "DIFFERENT"			
HYPERACTIVE			
CLUMSY			

I give my permission for ______________________________
to have all necessary medical examinations and laboratory tests from the physicians and other health personnel of the ETS-OEO study of young children. I further give my permission for personnel of this study to obtain copies of all birth and other hospital records of my child.

____

Date   Signature of parent or guardian

SCREENING TESTS RECORD

	CHARACTERISTIC	TYPE OF TEST	RESULTS		COMMENTS
			NORMAL	ABNORMAL	
VISION SCREENING	ACUITY (FAR)				
	ACUITY (NEAR)				
	OCULAR MOTILITY				
	FUSION				
AUDITORY SCREENING	ACUITY	AIR CONDUCTION			

Blood:
Hemoglobin, in grams/100ml ____________

PHYSICAL EXAMINATION

HEIGHT	WEIGHT	AGE	
Inches	Lbs.-Ozs.	YEARS	MONTHS

DOES THE EXAMINATION REVEAL ANY ABNORMALITY IN:	ABNORMAL	NORMAL	NOT EXAMINED	DESCRIBE FULLY ANY ABNORMAL FINDINGS
GENERAL APPEARANCE, POSTURE, GAIT				
SPEECH				
BEHAVIOR DURING EXAMINATION				
SKIN				
EYES: EXTERNALS				
OPTIC FUNDI				
EARS: EXTERNAL AND CANALS				
TYMPANIC MEMBRANES				
NOSE, MOUTH, PHARYNX				
TEETH				
HEART				
LUNGS				
ABDOMEN (INCLUDE HERNIAS)				
GENITALIA				
BONES, JOINTS, MUSCLES				
NEUROLOGICAL EXAMINATION				
OTHER				

DEVELOPMENTAL SCREENING EXAMINATION

	NORMAL FOR AGE	OTHER (EXPLAIN)	REMARKS
GROSS MOTOR FUNCTION			
FINE MOTOR AND MANIPULATIVE FUNCTIONS			
ADAPTIVE FUNCTION			
LANGUAGE FUNCTION			
PERSONAL-SOCIAL FUNCTION			

SUMMARY OF FINDINGS, TREATMENTS, AND RECOMMENDATIONS

ABNORMAL FINDINGS	ADVICE AND TREATMENT GIVEN	RECOMMENDATIONS OR FURTHER EVALUATION, TREATMENT OR SOCIAL OR EDUCATIONAL SERVICES.

SIGNATURE OF PHYSICIAN DATE

AUDITS & SURVEYS, INC.
One Park Avenue
New York, New York 10016

Project #5370

March/May, 1969

YOUNG CHILDREN & THEIR FIRST SCHOOL EXPERIENCES
PARENT INTERVIEW

PART I: CHILD & SCHOOL

First I'd like to ask you some questions about (SAMPLE CHILD).

1. How does (SAMPLE CHILD) spend most of his or her time? (IF MORE THAN ONE MENTIONED, ASK: "WHICH ONE MOST," AND CIRCLE.)

   ___a. Watches TV

   ___b. Follows mother around

   ___c. Plays by himself

   ___d. Plays with other children in neighborhood

   ___e. Plays with brothers and sisters or other relatives

   ___f. Other (SPECIFY)________________________________

   ___g. Don't know

2. Where does (SAMPLE CHILD) usually play? (CHECK ONE.)

   ___a. House

   ___b. Yard

   ___c. Street in front of house

   ___d. Other (SPECIFY)________________________________

   ___e. Don't know

3. What kind of things does he/she play with most?____________________

   ____

4. What does (SAMPLE CHILD) like to do the most? ____________________

5. About how many hours, when he/she is awake, is (SAMPLE CHILD) usually with you during the day?

   ____

6. During the time he/she is with you, what are you usually doing?__________

   ____

   ____

SAMPLE CHILD'S NAME ________________________________

RESPONDENT'S NAME ________________________________

Comparing (SAMPLE CHILD) with most three and four year old children, I would like you to tell me if he/she:

(INTERVIEWER: READ EACH ITEM. IF DIFFICULTY IS EXPERIENCED IN OBTAINING ANSWERS SPECIFIED, SAY: It is important in your answers to bear in mind that even if you feel that your child is "average" or "like other children in general" it is possible to answer each question "Yes" or "No.")

IF RESPONSE IS "In some things." ASK RESPONDENT TO SPECIFY.)

	Yes	No	In Some Things (SPECIFY)	Don't Know
7. Acts older than most children (his/her age)	[ ]	[ ]	______	[ ]
8. Is happier than most children (his/her age)	[ ]	[ ]	______	[ ]
9. Cries more than other children (his/her age)	[ ]	[ ]	______	[ ]
10. Is easier to get along with than most children (his/her age)	[ ]	[ ]	______	[ ]
11. Has more temper tantrums than most children (his/her age)	[ ]	[ ]	______	[ ]
12. Acts younger than most children (his/her age)	[ ]	[ ]	______	[ ]
13. Asks more questions than most children (his/her age)	[ ]	[ ]	______	[ ]
14. Stays by himself more than most children (his/her age)	[ ]	[ ]	______	[ ]
15. Is more active or restless than most children (his/her age)	[ ]	[ ]	______	[ ]
16. Is afraid of more things than most children (his/her age)	[ ]	[ ]	______	[ ]

17. When (SAMPLE CHILD) goes to school, do you think he/she will have more or fewer problems than most children getting used to school?

___a. Fewer

___b. About average

___c. More

___d. Don't know

18. Compared to other children that will be in his/her class, how do you think he/she will get along with the teacher?

___a. Better than most children

___b. About average

___c. Not as well as most children

___d. Don't know

19. Do you think he/she will be shy with his/her teacher?

___a. Yes

___b. No

___c. Don't know

20. Every child has strong points and weak points. Some young children are able to do things that most other children can't do, like dressing themselves or thinking up new games to play. What are the things that your child can do well? (PROBE: Any others?)

____

____

____

21. What are the things that he/she can't do well? (PROBE: Any others?)

____

____

____

At what age do you think (SAMPLE CHILD) will be able to do the following things?

	Can Now Do	Will Be Able To Do At Age:	Don't Know
22. Dress or undress himself completely on his own?	[ ]	________	[ ]
23. Pick up his own toys & take care of them?......	[ ]	________	[ ]
24. Make friends with and play with other kids completely on his own?..........................	[ ]	________	[ ]
25. Make his own breakfast himself?...............	[ ]	________	[ ]
26. Do regular tasks around your house?...........	[ ]	________	[ ]
27. Settle by himself an argument with an older brother or sister, or older cousins?...........	[ ]	________	[ ]
28. Read stories alone without your help?.........	[ ]	________	[ ]
29. Take part in your adult interests and conversations with friends?.........................	[ ]	________	[ ]
30. Earn his own spending money?..................	[ ]	________	[ ]
31. Tie his/her own shoes?........................	[ ]	________	[ ]
32 Know the colors red, blue, yellow, green?.....	[ ]	________	[ ]
33. Know his/her full name?.......................	[ ]	________	[ ]
34. Know these parts of his/her body: ears, toes, neck, knees?..................................	[ ]	________	[ ]
35. Count to 5?..................................	[ ]	________	[ ]

36. Do you ever read or tell children's stories to (SAMPLE CHILD)?

___a. Yes

> 37. Do you mainly read or tell stories, or do you do both?
>
> ___a. Mainly tell stories
>
> ___b. Mainly read stories
>
> ___c. Do both
>
> 38. About how often do you do this? (CHECK ONE.)
>
> ___a. Once in awhile (less than once a week)
>
> ___b. About once a week
>
> ___c. Several times a week
>
> ___d. Regularly (at least once a day)
>
> ___e. Very frequently (much of each day)
>
> ___f. Don't know

___b. No (INCLUDES "SELDOM" OR "NEVER.")

39. Does anyone else ever read to (SAMPLE CHILD)?

___a. Yes

> 40. Who is that? (CHECK ONE.)
>
> ___a. Father
>
> ___b. Other male adult
>
> ___c. Female adult
>
> ___d. Older children
>
> ___e. Other(SPECIFY)____________
>
> ____________________________
>
> 41. About how often is (SAMPLE CHILD) read to by this person (these people, counting all their time)?
>
> ___a. Once in awhile (less than once a week)
>
> ___b. About once a week
>
> ___c. Several times a week
>
> ___d. Regularly(at least once a day)
>
> ___e. Frequently(much of each day)
>
> ___f. Don't know

___b. No

42. What is his/her favorite story, or favorite kind of story?

___a. Vague (likes them all, funny stories, cartoons,etc.)

___b. Specific (Dr. Seuss, Bible Stories, etc.)

___c. Title mentioned (if any)________________________________

___d. Don't know

(INTERVIEWER: IF NO TITLE MENTIONED, SAY: "Is there a particular favorite one that he/she likes?")

43. Does (SAMPLE CHILD) have things to draw with, such as paper, pencils and crayons or paints, here at home?

___a. Yes

___b. No

___c. Don't know

44. If you could have your wish, what grade in school would you like (SAMPLE CHILD) to complete?

___a. Grade given (SPECIFY)________________________________

___b. Other ________________________________

___c. Don't know

45. Since things don't always turn out the way we want them to, how far do you think (SAMPLE CHILD) will actually go in school?

___a. Grade given (SPECIFY) ________________________________

___b. Other ________________________________

___c. Don't know

46. In your opinion, what could prevent (SAMPLE CHILD) from completing (INSERT ANSWER TO Q.44)?

____

____

____

SHOW SIDE 1 OF CARD

47. This is a picture showing children in school. This one is doing the very best work (POINT TO ONE ON RESPONDENT'S LEFT). This one is doing the very poorest work (POINT TO ONE ON RESPONDENT'S RIGHT). Please point to the one you think (SAMPLE CHILD) will be when he/she enters school?

NUMBER POINTED TO: ______________

(INTERVIEWER: NOTE THAT IN THE FOLLOWING THREE QUESTIONS WE ARE NOT INTERESTEO IN ANY SPECIFIC INCIDENT.)

48. What do you do if (SAMPLE CHILD) asks a question that you can't answer?

(INTERVIEWER: IF RESPONSE IS "THIS NEVER HAPPENS," PROBE: "What would you do if this did happen?" IF RESPONSE IS "I OON'T KNOW," PROBE: "You don't know what you'd say to (SAMPLE CHILO)".)

49. What do you usually say or do if (SAMPLE CHILO) does something you think is really naughty or bad?

(INTERVIEWER: IF RESPONSE IS "I'O TALK TO HIM," PROBE: "What would you say?")

50. What do you usually say or do if (SAMPLE CHILD) does some little thing that he shouldn't do?

(INTERVIEWER: IF RESPONSE IS "I'O TALK TO HIM," PROBE: "What would you say?")

Now I'm going to ask your opinions about education in general, and about the schools in this area.

WHERE "CITY/AREA" IS PRINTED:

USE "CITY" IN AUBURN, ALA., PORTLAND, ST.LOUIS, TRENTON

USE "AREA" IN RURAL AREAS OF LEE COUNTY, ALA.

51. People have different ideas about what students are like in grade school. What is your idea of a good student?

52. People also have different ideas about what teachers are like in grade school. What is your idea of a good teacher?

____

____

____

53. Do you think the buildings and equipment for the schools that your children would go to are as good as or better than those in most other schools in the city/area or do you think the buildings and equipment are worse here? (CHECK ONE.)

___a. Better than most other schools

___b. As good as most other schools

___c. Worse than most other schools

___d. Don't know

54. Do you think that most teachers in the schools that your children would go to are as good as teachers in most other schools in the city/area?

___a. Yes

___b. No

___c. Don't know

55. Do you feel that most teachers in the schools that your children would go to pay enough attention to all children, or do you think that they neglect some children?

___a. Neglect some children

56. Why?______________________

____

____

____

____

___b. Pay attention to all children

___c. Don't know

57. Do you think the schools in your district are teaching children the things that they should, or do you think they teach useless or even harmful things?

___a. Teach what they should

___b. Teach useless or harmful things

___c. Don't know

58. Do you think the schools would be better or worse if parents had more control over them? (the schools)

___a. Better

___b. Worse

___c. About the same

___d. Don't know

59. Do you think that the teachers understand the problems faced by the people in this area, or do you think that the teachers have no idea about these problems?

___a. Understand

___b. No idea

___c. Don't know

60. Do you think that there is anything that you yourself can do to improve the schools in this neighborhood?

___a. No

___b. Yes

___c. Don't know

61. Why is there nothing you can do? ___________

____

____

____

62. Do you think that most classrooms in your district are over-crowded?

___a. Yes

___b. No

___c. Don't know

63. Do you think that most teachers really want to talk with parents about school?

___a. Yes

___b. No

___c. Don't know

64. Do you think it is okay for parents to keep their children out of school to help out at home once in a while?

___a. Yes

___b. No

___c. Don't know

65. Do you feel that teachers make children doubt and question things that they are told at home?

___a. Yes

___b. No

___c. Don't know

66. Do you think <u>most</u> teachers in the schools your children will go to are good examples for your children?

___a. Yes

___b. No

___c. Don't know

67. Do you think that parents <u>usually</u> are to blame when children do not work hard at school?

___a. Yes

___b. No

___c. Sometimes

___d. Partially

___e. Don't know

68. Do you think anyone who can do the work can go to college if he wants to?

___a. No — 69. Why? ______________________________

___b. Yes

___c. Don't know

70. If you disagree with the school principal, do you feel that you can do anything about it?

___a. No — 71. Why do you feel you cannot do anything? ______________________________

___b. Yes

___c. Don't know

72. Do you feel that most children have to be made to learn?

___a. Yes

___b. No

___c. In some things

___d. Don't know

PART II: COMMUNITY

Now I'm going to describe some problems that come up in everyday life.

73. Where would you go or whom would you call to get advice or help with educational problems? (IF "SCHOOL," PROBE FOR WHO AT SCHOOL.)

____

74. Have you ever had to contact this person/organization?

___a. Yes
  75. Was the problem taken care of?
  ___a. Yes
  ___b. No

___b. No

76. Where would you go or whom would you call to get advice or help with health problems? (IF A PERSON IS NAMED, ASK: "What is ___________'s job?")

____

77. Have you ever had to contact this person/organization?

___a. Yes
  78. Was the problem taken care of?
  ___a. Yes
  ___b. No

___b. No

79. Where would you go or whom would you call to get advice or help if you had to go to court or had other legal problems?

____

80. Have you ever had to contact this person/organization?

___a. Yes
  81. Was the problem taken care of?
  ___a. Yes
  ___b. No

___b. No

82. Where would you go or whom would you call to get advice or help in getting a job, or if you had other job problems? (IF EMPLOYMENT OFFICE, GET NAME AND INDICATE WHETHER PUBLIC OR PRIVATE.)

____

83. Have you ever had to contact this person/organization?

___a. Yes
  84. Was the problem taken care of?
  ___a. Yes
  ___b. No

___b. No

85. What streets or roads or other boundaries would you say are the borderlines of your neighborhood?

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

I'm going to read a list of things that may be available to children in a particular area. Listen to each and tell me if it is available to your child(ren) in your neighborhood, in the general area, but not within walking distance, or not available at all.

		In Neighborhood	In General Area	Not Available	Don't Know
86.	Nursery school or day-care center	[ ]	[ ]	[ ]	[ ]
87.	Clinic..........................	[ ]	[ ]	[ ]	[ ]
88.	Hospital........................	[ ]	[ ]	[ ]	[ ]
89.	Summer day-camp.................	[ ]	[ ]	[ ]	[ ]
90.	After hour school programs.......	[ ]	[ ]	[ ]	[ ]
91.	Teen center......................	[ ]	[ ]	[ ]	[ ]
92.	Public library...................	[ ]	[ ]	[ ]	[ ]
93.	Public playground (with equipment and space for children of all ages)........................	[ ]	[ ]	[ ]	[ ]
94.	Public park for adults and children.........................	[ ]	[ ]	[ ]	[ ]
95.	Art gallery......................	[ ]	[ ]	[ ]	[ ]
96.	Museum (science, history, art or other)........................	[ ]	[ ]	[ ]	[ ]
97.	Live theatre (where plays, puppet shows are given)..........	[ ]	[ ]	[ ]	[ ]
98.	Auditorium where music or speeches can be heard............	[ ]	[ ]	[ ]	[ ]
99.	Zoo.............................	[ ]	[ ]	[ ]	[ ]

100. Where would you have to go to vote? (PROBE FOR SPECIFIC PLACE.)

____

101. Have you ever voted in any election?

___a. Yes 102. Did you vote in the last national election?

___b. No

___a. No

___b. Yes 103. Why?___________________

SKIP TO Q.105

104. Why? (IF "NOT REGISTERED TO VOTE," ASK: "Why not?")

____

____

105. Do you think that most candidates for public office run more to get themselves ahead or to carry out the things they promise people? (IF RESPONSE IS "BOTH," PROBE TO FIND OUT WHICH ONE "MORE.")

___a. To carry out promises

___b. To get ahead

___c. Don't know

106. If everybody in this neighborhood had about the same problem -- say a new highway was going to cut through the neighborhood and cause a lot of people to have to move -- would you get together with your neighbors to try to change the highway plans?

___a. Yes 107. Do you think you will be able to change the plans?

___a. Yes

___b. No

___b. No

___c. Don't know

108. In the past, was there anything around here which you wanted changed or improved, like jobs or housing or public transportation, or schools?

___a. Yes 109. What was it? ___________________

___b. No

110. Did the change or improvement occur?

___a. Yes

___b. No

___c. Don't know

111. If you had a friend who lived in another city, and he asked you for your advice, would you recommend that he move to this neighborhood?

___a. Yes — 112. Why? ______________________
___b. No — ______________________
___c. Don't know — ______________________

113. If one of your children needed help, and you weren't around, could he go to most of his neighbors and expect to get it?

___a. Yes
___b. No
___c. Don't know

114. Is anyone or any group in the neighborhood having any success in getting things done that would make this a better place to live?

___a. Yes — 115. I guess you have some person or organization in mind. Would you mind telling me who it is? (IF PERSON MENTIONED, PROBE FOR JOB TITLE.)
___b. No
___c. Don't know

____

116. If you saw two children playing "catch" in a busy street or highway, what would you do? (RECORD VERBATIM RESPONSES.)

____
____
____

117. Is it safe for (SAMPLE CHILD) to play outside of the house?

___a. Yes
___b. No — 118. Why? ______________________
____
____
____

PART III: PERSONAL

Now, I'd like to ask a few questions about you.

Do you now belong to any of the following kinds of groups?

INTERVIEWER: READ EACH TYPE OF GROUP AND RECORD WHETHER OR NOT RESPONDENT BELONGS. FOR EACH TYPE OF GROUP RESPONDENT BELONGS TO ASK:

A. What are the names of the groups to which you belong?

B. How often do you usually go to meetings of this group?

C. How far from here is the place where it meets? (RECORD ANSWER IN BLOCKS OR MILES) Is that (1) in your neighborhood; (2) in another part of this city/area; (3) outside of this city/area (in the country); (4) outside of this city/area (in another town). (RECORD NUMBER)

D. How did you get to the last meeting, by bus, taxi or what?

E. Do you hold any office in this group or do anything special for it?

F. (IF "YES" TO "E"): What job do you do?

	BELONG		A.
	Yes	No	Names of Groups
119. Religious groups or church organizations such as choir, ladies auxiliary?	[ ]	[ ]	
120. Clubs or social groups such as woman's clubs or card clubs or bowling clubs?	[ ]	[ ]	
121. Neighborhood action associated groups such as Community Action Programs, block groups, parents' councils?	[ ]	[ ]	
122. Groups which are mainly connected with children's education such as PTA, Head Start?	[ ]	[ ]	
123. Political action groups such as a political party or CORE, NAACP, SCLC, or Citizens Committees?	[ ]	[ ]	
124. Other groups such as job-affiliated groups, unions, study groups, etc.?	[ ]	[ ]	

IF RESPONDENT BELONGS TO MORE THAN ONE GROUP, ASK:

125. Which group that you belong to is most important to you?

____

B. Freq. of Attend	C. Distance & Location: Block or Miles		Location (Code #)	D. Means of Trans.	E. Office Holder: Yes	No	F. Name of Job
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
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					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	
					[ ]	[ ]	

126. Do you go to church or another religious institution?

___a. Yes 127. Which one? ______________________

___b. No

128. How often do you go?

___a. More than once a week

___b. Once a week

___c. Once every two weeks

___d. Once a month

___e. Less than once a month

129. About how many blocks or miles is this from your home?

Blocks __________ Miles __________

130. Where is it? (READ LIST):

___a. In your neighborhood

___b. In another part of this city/area

___c. Outside of this city/area (suburbs or country)

___d. Outside of this city/area (another town)

131. How do you get there most of the time?

___a. Walk

___b. Public transportation

___c. Drive

___d. Taxi

___e. Someone else takes respondent

___f. Other (SPECIFY) ______________________

132. When you go, do you usually take (SAMPLE CHILD)?

___a. Yes

___b. No

133. What was the last grade in school that you completed? ______________

SHOW SIDE 2 OF CARD.

134. The first person in this picture is very satisfied with the education she received, while she was in school. (POINT TO FIGURE ON RESPONDENT'S LEFT.) The last person is very dissatisfied with the education she received. (POINT TO FIGURE ON RESPONDENT'S RIGHT.) Point to the person who represents how satisfied or dissatisfied you are with the education you received in school.

Person Pointed to: __________

135. Since you left grade_______, have you gone to any other school?

___a. Yes — 136. What type of school? ____________________

___b. No

137. How long did you go there?________________

138. Are you in school at the present time?

___a. Yes

___b. No

139. Have you ever had a paid job?

___a. Yes

___b. No ——→ IF "NO," SKIP TO Q.157

140. Do you now have a paid job?

___a. Yes

___b. No — 141. Are you presently looking for work?

___a. Yes

___b. No

SKIP TO Q.152

142. Are you employed full-time, which is 35 hours per week or more, or part time, which is less than 35 hours per week?

___a. Full-time

___b. Part-time

143. What is your job?

____

144. What exactly do you do?______________________________

____

145. What kind of business/industry is that?
(What does firm/organization make or do?)____________________

146. (IF OBVIOUS, DO NOT ASK): Are you:

___a. Self-employed

___b. Salaried

147. How do you usually get to work? (CHECK ONE)

___a. Walking

___b. Public transportation

___c. Driving

___d. Taxi

___e. Being driven by someone else

___f. Other (SPECIFY)___________________________

148. About how far is that?

Blocks___________ Miles ___________

149. Where is it? (READ LIST)

___a. In your neighborhood

___b. In another part of this city/area

___c. Outside of this city/area (suburban or country)

___d. Outside of this city/area (another town)

150. Does (SAMPLE CHILD) usually go with you?

___a. Yes

___b. No

151. When did you start working there? ___________________________

(ASK Q.152 OF THOSE WHO HAVE HAD A PAID JOB (Q.139) BUT ARE NOT WORKING (Q.140), OR HAVE BEEN WORKING ON THEIR PRESENT JOB FOR LESS THAN ONE YEAR (Q.151).

152. What was the last full-time job you had? (SPECIFY)

____

153. What exactly did you do? ___________________________

____

154. What kind of business/industry was that?
(What did the firm/organization make or do?)___________________________

155. (IF OBVIOUS, DO NOT ASK) were you:

___a. Self-employed

___b. Salaried

156. When did you start and when did you stop?

_______________ Date Started ________________ Left
Month, Year Month, Year

IF CAN'T RECALL: "About how long ago did you work there?"____________

157. Are you married now?

___a. Yes 158. Are you: (CHECK ONE)
___a. Married, but husband/wife temporarily absent
___b. Married and living with husband/wife
___c. Separated SKIP TO Q.160

___b. No 159. Are you: (CHECK ONE)
___a. Single, never married
___b. Divorced
___c. Widowed
___d. Separated
SKIP TO Q.181

160. What was the last grade in school that your husband completed?____________

161. Since he left __________ grade, has he gone to any other school?

___a. Yes 162. What type of school?________________
___b. No 163. How long did he go there?______________
___c. Don't know 164. Is he in school at the present time?
___a. Yes
___b. No

165. Is he now employed?

___a. Yes

___b. No 166. Is he presently looking for work?
___a. Yes
___b. No
SKIP TO Q.177

167. Is he employed full-time, which is 35 hours per week or more, or part-time, which is less than 35 hours per week?

___a. Full-time

___b. Part-time

168. What is his job? ____________________

169. What exactly does he do? ____________________

____

170. What kind of business/industry is that?
(What does firm/organization make or do?) ____________________

171. (IF OBVIOUS, DO NOT ASK) Is he:

___a. Self-employed

___b. Salaried

172. How does he usually get to work? (CHECK ONE)

___a. Walking

___b. Public transportation

___c. Driving

___d. Taxi

___e. Being driven by someone else

___f. Some other way? How? (SPECIFY) ____________________

173. About how far is that?

Blocks ______________ Miles ______________

174. Where is it? (READ LIST):

___a. In your neighborhood

___b. In another part of this city/area

___c. Outside of this city/area (suburban or country)

___d. Outside of this city/area (another town)

175. Does he usually take (SAMPLE CHILD) with him?

___a. Yes

___b. No

176. When did he start working there? ____________________

(ASK Q.176 OF THOSE WHOSE HUSBANDS ARE NOT NOW WORKING (Q.165), OR WHOSE HUSBANDS HAVE BEEN WORKING ON THEIR PRESENT JOB FOR LESS THAN ONE YEAR (Q.175).

177. What was the last full-time job he had? (SPECIFY) ____________________

178. What exactly did he do? ____

____

179. What kind of business/industry is that?
(What does the firm/organization make or do?) ____________________

180. How long did he work there? ____________________________________

Date Started __________ (Month, Year) Left __________ (Month, Year)

181. "Now about the people in this household. First, I'd like you to tell me, beginning with the oldest and going down to the youngest, the first names of everyone in this household, including yourself."

FOR EACH PERSON LISTED, ASK: (RECORD ALL ANSWERS BELOW.)

a. What kin is ________ to (SAMPLE CHILD) ?

b. What is his/her sex?

c. What is his/her age as of his/her last birthday?

d. (IF OLDER THAN 3 ASK:) Is ________ in school now? (INCLUDES NURSERY SCHOOL AND HEAD START.)

e. (IF OVER 14, ASK:) Does ________ have a full-time or part-time paid job?

f. (IF "NO," TO "d" AND "e", ASK:) What is ________ doing now?

g. (FOR ALL CHILDREN UNDER 6 YEARS OF AGE, ASK:) Has ________ ever attended any pre-school program? (IF YES:) Which one?

NAME	a. RELATIONSHIP	b. SEX	c. AGE	d. SCHOOL	e. WORK	f. OTHER	g. PRE-SCHOOL (SPECIFY)
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		
		___M ___F			___YES ___NO		

182. Are there any other people who usually live here but are away now--serving in the armed forces, living with relatives or something like that?

___a. Yes — Please tell me their names. Again, I would like the name of the oldest first. (RECORD BELOW)

___b. No

FOR EACH PERSON LISTED, ASK: (RECORD ALL ANSWERS BELOW.)

a. What kin is ________ to (SAMPLE CHILD)?

b. What is his/her sex?

c. What is his/her age as of his/her last birthday?

d. (IF OLDER THAN 3, ASK:) Is________ in school now? (INCLUDES NURSERY SCHOOL AND HEAD START)

e. (IF OVER 14, ASK:) Does __________ have a full-time or part-time paid job?

f. (IF "NO" TO d AND e, ASK:) What is_________ doing now?

g. (FOR ALL CHILDREN UNDER 6 YEARS OF AGE, ASK:) Has__________ ever attended any pre-school program? (IF "YES":) Which one?

NAME	a. RELATIONSHIP	b. SEX	c. AGE	d. SCHOOL	e. WORK	f. OTHER	g. PRE-SCHOOL (SPECIFY)
		__M __F			__YES __NO		
		__M __F			__YES __NO		
		__M __F			__YES __NO		
		__M __F			__YES __NO		
		__M __F			__YES __NO		
		__M __F			__YES __NO		

183. About how many times have you moved in the last 3 years? ________________

184. About how many years have you lived in this house/apartment?

___a. # years (SPECIFY) ________________
___b. All my life→(SKIP TO Q.188)

185. How long have you lived in this neighborhood? (The one you gave the boundary lines for earlier.)

___a. # years (SPECIFY)________________
___b. All my life→(SKIP TO Q.188)

186. How long have you lived in this town/county?

___a. # years (SPECIFY)________________
___b. All my life→(SKIP TO Q.188)

187. Before you moved to this town/county, where did you live?

_______________ _______________ _______________
City State Country

188. Do you want to move?

___a. Yes

___b. No

___c. Don't know

189. Do you expect to move?

___a. Yes Where? _______________

___b. No When? _______________

___c. Don't know

190. When you think of "home," what place do you think of?

____

191. Where were you born? _______________
(City and state; country if not U.S.A.)

192. When were you born? _______ / _______ / _______
Month / Day / Year

193. (IF MARRIED:) Where was your husband born? _______________

194. (IF MARRIED:) When was your husband born? _______ / _______ / _______
Month / Day / Year

195. How many rooms are there in this house? (Exclude bathroom, utility rooms, and other areas unsuitable for sleeping or general living purposes.)

Number _______________

196. Do you, or does anyone else in this household, usually speak any language(s) other than English?

___a. Yes 197. Which language? _______________

___b. No 198. Who speaks it? _______________

Does (SAMPLE CHILD) have his/her own:

		Yes	No
199.	Room?..	[ ]	[ ]
200.	Bed?..	[ ]	[ ]
201.	Dresser, clothes chest or drawer(s) for his/her clothes only?..	[ ]	[ ]
202.	Closet (or section of closet partitioned for him/her)?.....	[ ]	[ ]
203.	Toys?..	[ ]	[ ]
204.	Toy box (or other place to keep own things)?...............	[ ]	[ ]
205.	Pet?..	[ ]	[ ]

INTERVIEWER: IF CHILD SHARES PET BUT IS RESPONSIBLE FOR CARE, CHECK "YES".

206. Does anyone usually sleep in the room with (SAMPLE CHILD)?

___a. Yes

207. Who usually sleeps in the room with (SAMPLE CHILD)? (CHECK ALL THAT APPLY)

___a. No response
___b. No one: child sleeps alone
___c. Like-sexed child(ren)
___d. Child(ren) of the opposite sex
___e. Parents or caretakers

___b. No

Which of the following things do you have? (FOR EACH ITEM RESPONDENT HAS, ASK): "How many?"

	No	Yes	How Many
208. Automobile	[ ]	[ ]	________
209. Television	[ ]	[ ]	________
210. Radio	[ ]	[ ]	________
211. Hi-Fi or phonograph	[ ]	[ ]	________
212. Telephone	[ ]	[ ]	________
213. Encyclopedia	[ ]	[ ]	________
214. Dictionary	[ ]	[ ]	________

215. Do you read any newspapers regularly?

___a. Yes
216. What are they? (FULL NAMES IF KNOWN) ____________________
____
____

___b. No

217. Do you read any magazines regularly?

___a. Yes
218. Which ones? ____________________
____
____

___b. No

One thing in which we are very much interested is whether or not you go out of your own neighborhood for food, or entertainment, or to see relatives and friends.

219. First of all, who does most of the shopping for food for your family?

____a. respondent
____b. busband
____c. a child
____d. some other person

220. What is the name of the store where you usually shop for food and where is it?

____________________ / ____________________
Store Name Street

221. Do you usually take (SAMPLE CHILD)?

____a. Yes

____b. No

222. How do you usually get there?

____a. walk
____b. public transportation
____c. drive
____d. taxi
____e. someone else takes

223. How often do you go?

____a. more than once a week
____b. once a week
____c. once every two weeks
____d. once a month
____e. less than once a month

224. Do you have any relatives (kinfolk) who live within 20 miles of here?

___a. No
___b. Don't know } SKIP TO Q.241

___c. Yes 225. How many? ____________

IF MORE THAN 3 IN Q.225, ASK: "Who are the 3 you visit the most? If you don't want to give me their names, we can call them A, B and C."

IF 3 OR LESS IN Q.225, ASK: "Who are they? If you don't want to give me their names, we can call them A, B and C."

RECORD NAMES BELOW. ASK QUESTIONS FOR FIRST RELATIVE, THEN SECOND RELATIVE THEN THIRD RELATIVE.

Now, for (FIRST RELATIVE) that you visit:

	1st Relative	2nd Relative	3rd Relative
Name or Relationship			
226-228. Do you usually take (SAMPLE CHILD)?	___ Yes ___ No	___ Yes ___ No	___ Yes ___ No
229-231. How far from your home does that relative live? (ANSWER IN BLOCKS OR MILES)			
# blocks or			
# miles			
232-234. Where is it? (READ LIST)			
a. in your neighborhood			
b. in another part of this city/area			
c. outside of this city/area (in suburbs or country)			
d. outside of this city/area (another town)			
235-237. How do you usually get there?			
a. walk			
b. public transportation			
c. drive			
d. taxi			
e. someone else takes			
238-240. How often do you go?			
a. more than once a week			
b. once a week			
c. once every two weeks			
d. Once a month			
e. less than once a month			

241. Do you have friends in this general area that you visit more than once a year?

___a. No
___b. Don't know } SKIP TO Q.258

___c. Yes 242. How many? ______________

IF MORE THAN 3 IN Q.242, ASK: "Who are the 3 you visit most? If you don't want to give me their names, we can call them A, B and C."

IF 3 OR LESS IN Q.242, ASK: "Who are they? If you don't want to give me their names, we can call them A, B and C."

RECORD NAMES BELOW. ASK QUESTIONS FOR FIRST FRIEND, THEN SECOND FRIEND, THEN THIRD FRIEND.

Now, for (FIRST FRIEND) that you visit:

	1st Friend	2nd Friend	3rd Friend
NAME			
243-245. Do you usually take (SAMPLE CHILD)?	___Yes ___No	___Yes ___No	___Yes ___No
246-248. How far from your home does that friend live? (ANSWER IN BLOCKS OR MILES)			
# blocks OR			
# miles			
249-251. Where is it? (READ LIST)			
a. in your neighborhood			
b. in another part of this city/area			
c. outside of this city/area (in suburbs or country)			
d. outside of this city/area (another town)			
252-254. How do you usually get there?			
a. walk			
b. public transportation			
c. drive			
d. taxi			
e. someone else takes			
255-257. How often do you go?			
a. more than once a week			
b. once a week			
c. once every two weeks			
d. once a month			
e. less than once a month			

258. Are there any places where you usually go out for entertainment or relaxation?

___a. No
___b. Don't know } SKIP TO STATEMENT IN ITALICS ON BOTTOM OF PAGE.

___c. Yes 259. How many? __________

IF MORE THAN 3 IN Q.259, ASK: "What are the 3 you visit most?"

IF 3 OR LESS, ASK: "What are they?"

IF RESPONDENT HESITATES: "If you don't want to give me the names of these places, we can call them A, B and C."

RECORD NAMES BELOW. ASK QUESTIONS FOR FIRST PLACE, THEN SECOND PLACE, THEN THIRD PLACE.

Now, for the (FIRST PLACE) that you visit:

	1st Place	2nd Place	3rd Place
NAME OF PLACE			
260-262. Do you usually take (SAMPLE CHILD)?	___ Yes ___ No	___ Yes ___ No	___ Yes ___ No
263-265. How far from your home is this place?			
# blocks or			
# miles			
266-268. Where is it?			
a. in your neighborhood			
b. in another part of this city/area			
c. outside of this city/area (in suburbs or country)			
d. outside of this city/area (another town)			
269-271. How do you usually get there			
a. walk			
b. public transportation			
c. drive			
d. taxi			
e. someone else takes			
272-274. How often do you go?			
a. more than once a week			
b. once a week			
c. once every two weeks			
d. once a month			
e. less than once a month			

nk you for your cooperation; you have been most helpful.

TERVIEWER: CHECK TO MAKE SURE THAT YOU HAVE ASKED ALL QUESTIONS BEFORE LEAVING HOUSEHOLD.

INTERVIEWER'S OBSERVATIONS

COMPLETE THESE PAGES AFTER YOU LEAVE THE HOME

275. Type of dwelling - the dwelling is a:

___a. Single house, one family (detached or semi-detached)
___b. Duplex or row house, one unit for each family
___c. Converted single house, converted rowhouse, multi-family
___d. Apartment privately owned; garden-type
___e. Apartment (public housing; garden-type - housing project)
___f. Apartment (privately owned; multi-story)
___g. Apartment (public housing; multi-story - housing project)
___h. Trailer
___i. Other (SPECIFY) ______________________________

276. Is respondent's house:

___a. on the corner
___b. in the middle of the block
___c. not applicable

277. Are surrounding houses:

___a. like respondent's house
___b. different from respondent's house How? ____________________

278. Are the sidewalks or spaces between the yard or house and the street:

___a. more than 8 feet in width
___b. 4½ ft. to 8 ft. in width
___c. 4 ft. or less in width
___d. no sidewalks

279. Is the outside of respondent's house:

___a. new, in good repair
___b. new, in poor repair
___c. old, in good repair
___d. old, in poor repair

280. Does respondent's house have a yard?

___a. Yes
___b. No

281. Does there seem to be adequate outside play space available?

___a. Yes
___b. No

When interviewing, did you observe:	Yes	No	Could not Observe	Specific Observations
282. Bed in living room?	[ ]	[ ]	[ ]	______
283. Rug on living room floor?	[ ]	[ ]	[ ]	______
284. Clean, neat home? (Could be cleaned up in 1 day)	[ ]	[ ]	[ ]	______
285. Bed made?	[ ]	[ ]	[ ]	______
286. Temperature adequate/comfortable?	[ ]	[ ]	[ ]	______
287. Lighting adequate?	[ ]	[ ]	[ ]	______
288. Drapes drawn or shades down (if daytime)	[ ]	[ ]	[ ]	______
289. Did children appear in good health?	[ ]	[ ]	[ ]	______
290. Did children appear clean?	[ ]	[ ]	[ ]	______
291. Did you see mother (or caretaker) discipline a child?	[ ]	[ ]	[ ]	______
292. Did mother ask you for any help or information?	[ ]	[ ]	[ ]	______

293-295. Rate the person interviewed as to cooperativeness:	Part I	Part II	Part III
Very cooperative. Appeared friendly and relaxed with interviewer. No defensiveness. Volunteered information readily. Showed interest in the study and became involved in the interview.	[ ]	[ ]	[ ]
Cooperative. Appeared friendly and relaxed with the interviewer. Answered questions readily, but did not volunteer information beyond that requested. May or may not have shown interest in the study.	[ ]	[ ]	[ ]
Slightly uncooperative. Generally answered questions readily, but may have shown some defensiveness; maintained distance from interviewer.	[ ]	[ ]	[ ]
Uncooperative. Tenseness and defensiveness in answering questions. Expressed reservations about amount of time spent. An undercurrent of resistance to the interview. Little interest in the study.	[ ]	[ ]	[ ]
Very uncooperative. Explicit resistance to the interviewer or the interview. No interest in the study.	[ ]	[ ]	[ ]
296-298. Much of the information obtained may be unreliable because person interviewed seemed so concerned with making a "good impression" that questions may not have been answered truthfully.	[ ]	[ ]	[ ]

299. Rate the person interviewed as to your difficulty in understanding her speech.

___a. very difficult

___b. somewhat difficult

___c. not at all difficult

300. Rate the person interviewed as to her difficulty in understanding your speech.

___a. very difficult

___b. somewhat difficult

___c. not at all difficult

301-305. Was anyone present beside respondent during interview?

___a. one or more people present → FILL IN BELOW

___b. no one present

Person(s) Present	Number	Relationship to Child	Length of Time Present
Sample child	XXXXXXXX	XXXXXXXXXXXX	
Other children		XXXXXXXXXXXX	
Other adults			
Husband	XXXXXXXX	XXXXXXXXXXXX	

306. Noise level

___a. a lot of noise

___b. some noise

___c. little or no noise

307. Was the noise level distracting?

___a. Yes

___b. No

308. Did anything unusual occur during the interview?

___a. Yes

___b. No

309. What?

____

____

____

____

APPENDIX C

SCHEFFÉ'S METHOD OF MULTIPLE COMPARISONS

APPENDIX C

SCHEFFÉ'S METHOD OF MULTIPLE COMPARISONS

Scheffé (1953) has developed a method for making "a posteriori" multiple comparisons in the analysis of variance. The value of Scheffé's test lies mainly in the fact that his method permits cell mean comparisons without increasing the probability of a Type I error beyond α (where α is the significance level chosen for the F statistic). In comparison to other post hoc methods, the Scheffé has advantages of flexibility in the variety of comparisons that can be made and of simplicity. An additional advantage of Scheffé's method is that equal cell sizes are not required.

Generally, the overall F is computed first, and if this value is significant, then some comparison among the cell means must be significant, and Scheffé's test can be applied. The fact that a significant comparison exists, however, does not necessarily mean that it will be a meaningful one.

The procedure requires first computing a critical value, S, used for all comparisons where

$$S = \sqrt{(k-1) \times F_{\alpha(k-1, N-k)}}$$

k = the number of groups

N = the total sample size

F has α level of significance and $k - 1$, $N - k$ degrees of freedom. Then for each comparison, a value $\frac{\psi}{\sigma_\psi}$ must be computed where ψ is a linear combination of the j means to be compared:

$$\psi_j = c_1\bar{x}_2 + c_2\bar{x}_2 + \ldots + c_j\bar{x}_j \quad \text{where} \quad \sum_{i=1}^{j} c_i = 0$$

$\sigma_\psi = \sqrt{MS_E \times \sum_{i=1}^{j} \frac{c_i^2}{n_i}}$, where MS_E is the mean square error term in the analysis of variance, the c_i are as above, and the n_i are individual cell Ns. The value of $\frac{\psi}{\sigma_\psi}$ is then compared for every comparison to the S value computed above; if it exceeds S, the comparison is significant, and this comparison can be said to contribute to the overall significance of the F.

The following hypothetical example illustrates the use of Scheffé's test. Suppose that the scores on an experimental math test are as follows:

Group	N	$\bar{x}$
Male, High SES	13	77
Male, Low SES	12	62
Female, High SES	11	75
Female, Low SES	12	57

Analysis of Variance Table

Source	SS	df	MS	F
Between Groups	3102	3	1034.0	5.14
Error (within groups)	8844	44	201.0	
Total	11946	47		

The required $F_{.05}$ with 3 and 44 degrees of freedom is approximately 2.82; therefore, the obtained F is significant, and Scheffé's test can be usefully applied. First, the value of S must be computed where:

$$S = \sqrt{(k - 1) \times F} = \sqrt{3 \times 2.82} = 2.91 \quad .$$

Then the first comparison might logically be the smallest and largest cell means, male-high SES vs. female-low SES. Thus, for $j = 2$:

$$\psi = \sum_{i=1}^{j} c_i\bar{x}_i = 1 \times 87 - 1 \times 77 = 20.0$$

where $c_1 = 1$, $c_2 = -1$ and $c_1 + c_2 = 0$.

$$\sigma_\psi = \sqrt{MS_E \times \sum_{i=1}^{j} \frac{c_i^2}{n_i}} = \sqrt{201 \times (\frac{1^2}{13} + \frac{(-1)^2}{12})} = 5.67$$

$$\frac{\psi}{\sigma_\psi} = \frac{20.0}{5.67} = 3.53 \ .$$

Since 3.53 is greater than the S value of 2.88, these two cell means are significantly different at the .05 level. Other comparisons can be made on the same data, such as high SES vs. low SES. In this case the comparison would be set up as $\frac{1}{2}(77 + 75) - \frac{1}{2}(62 + 57)$ with the computation proceeding as above.

APPENDIX D

PROJECT PERSONNEL FOR THE 1970-71 STUDY YEAR

Appendix D

Project Personnel for the 1970-71 Study Year

Project Director: Virginia C. Shipman

ETS Advisory Committee: Scarvia B. Anderson, Samuel J. Messick, Herman F. Smith

Administration:

Executive Assistants: Ann P. McGoldrick, May C. Reinhardt
Administrative Assistant: James Towery
Coding Supervisor: Joan Tyson
Editorial Assistant: William E. Craycraft
Financial Coordinator: Carol McKnight
Contract Consultants: Charlotte Farley, Gretchen Sander

Field Operations:

Lee County, Alabama
Technical Consultant: Ray Phillips
Local Coordinator: Carolyn Tamblyn

Portland, Oregon
Technical Consultant: Robert Hughley
Technical Assistant: Mary Henderson

St. Louis, Missouri
Technical Consultant: Arthur Littleton

Trenton, New Jersey
Technical Consultant: Nancy Kuykendall

Research:

William Ward (Chairman), Anne Bussis, Edward Chittenden, Walter Emmerich, Michael Lewis, Carolyn Massad, Laniel P. Norton, Masako N. Tanaka, Ihor Y. Wynnyckyj

Analysis:

Specialist for Design and Analysis: Albert E. Beaton
Coordinator of Analysis: John L. Barone
Assistants for Analysis: Thomas F. Dwyer, Robert Patrick, Emily White

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